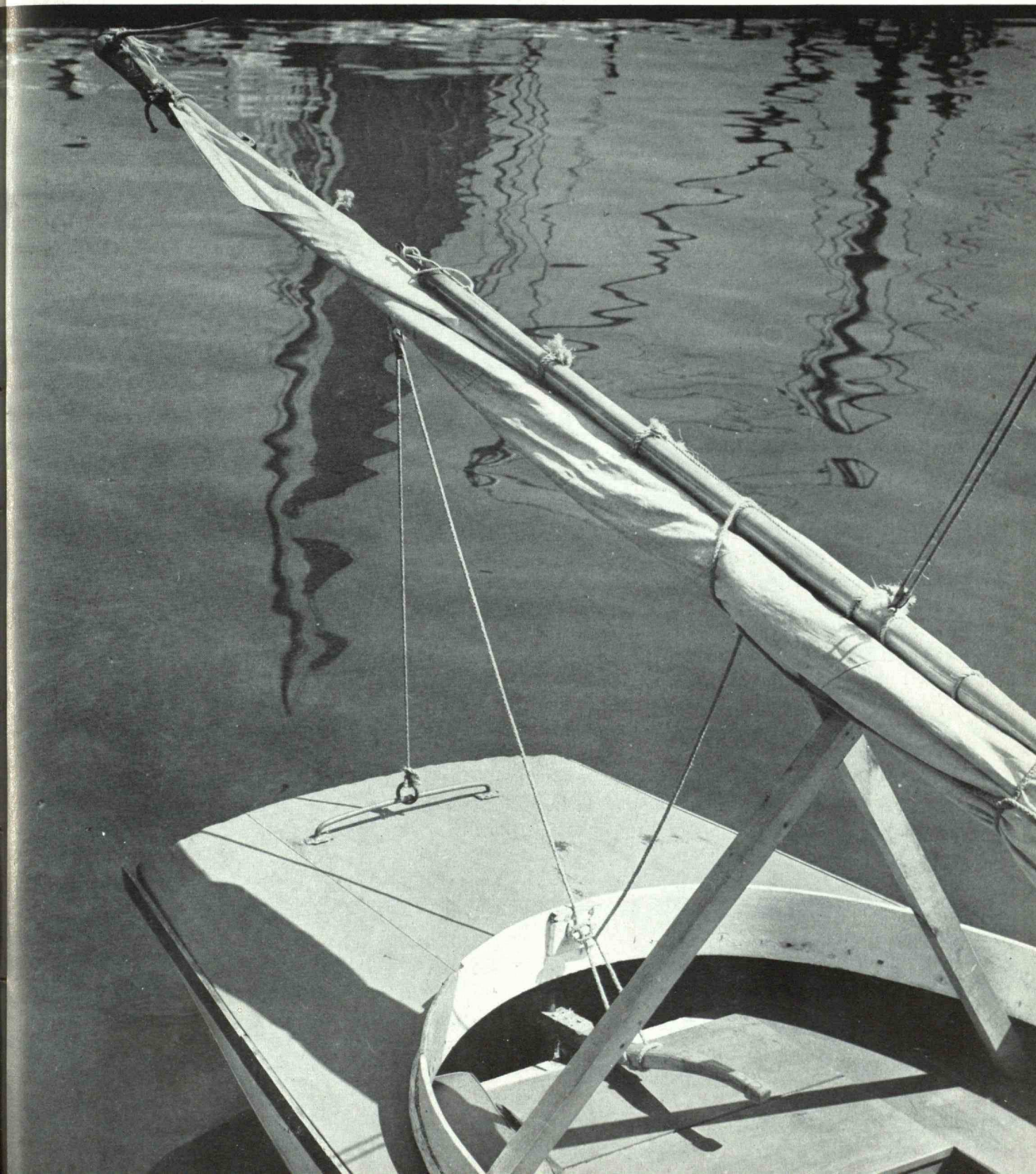


TECHNOLOGY

REVIEW *June* 1951



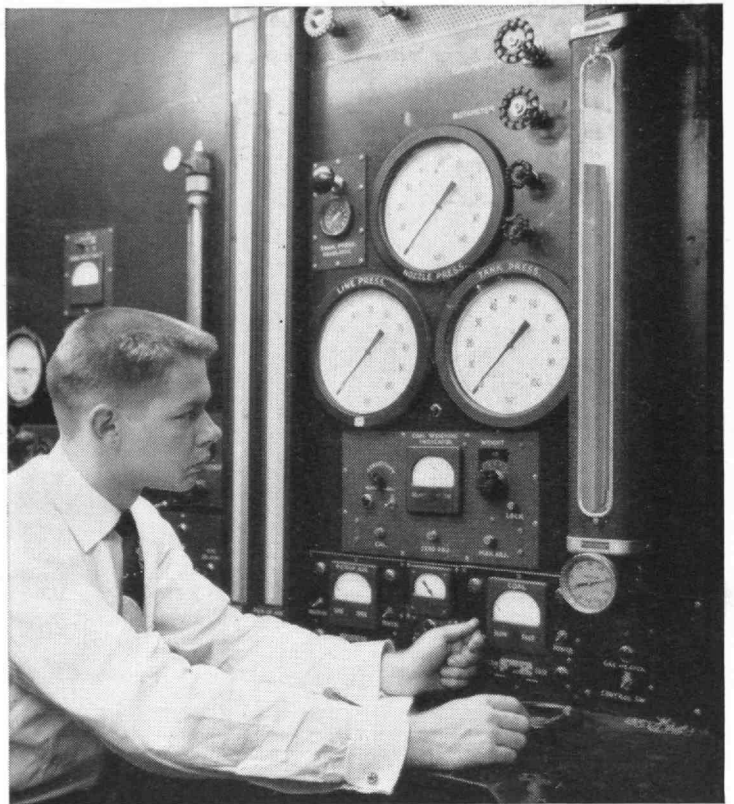
technology review

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Co-operation with Schools to Stimulate Interest of Graduate Students

To gain valuable industrial experience before starting to study for his Doctor's degree, Robert D. Haberstroh worked at the Westinghouse Research Laboratories during his 1950 vacation. He is shown preparing to run a test on a combustion chamber for a gas turbine. Mr. Haberstroh, a native of Johnstown, Pa., was graduated under the George Westinghouse Scholarship Program from Carnegie Institute of Technology last year with a Bachelor's Degree in mechanical engineering.



For more than half a century, Westinghouse has placed major emphasis on co-operating with educational institutions in the process of building men for positions of leadership. It was a pioneer in providing orientation and training programs for newly employed college graduates and in offering all employees opportunities for advanced degree work in co-operation with local universities. It has also been a leader in encouraging higher education in science and engineering through a large-scale program of scholarships and fellowships.

One of the latest additions to this broad program is a plan to co-operate with engineering schools in their advanced work by supplementing technical training with actual research experience.

Through this plan, selected students in graduate schools who are interested in the field of

research are given the opportunity to get practical laboratory experience. During summer months, 10 outstanding students selected from engineering schools are given the opportunity to gain experience in the Westinghouse Research Laboratories.

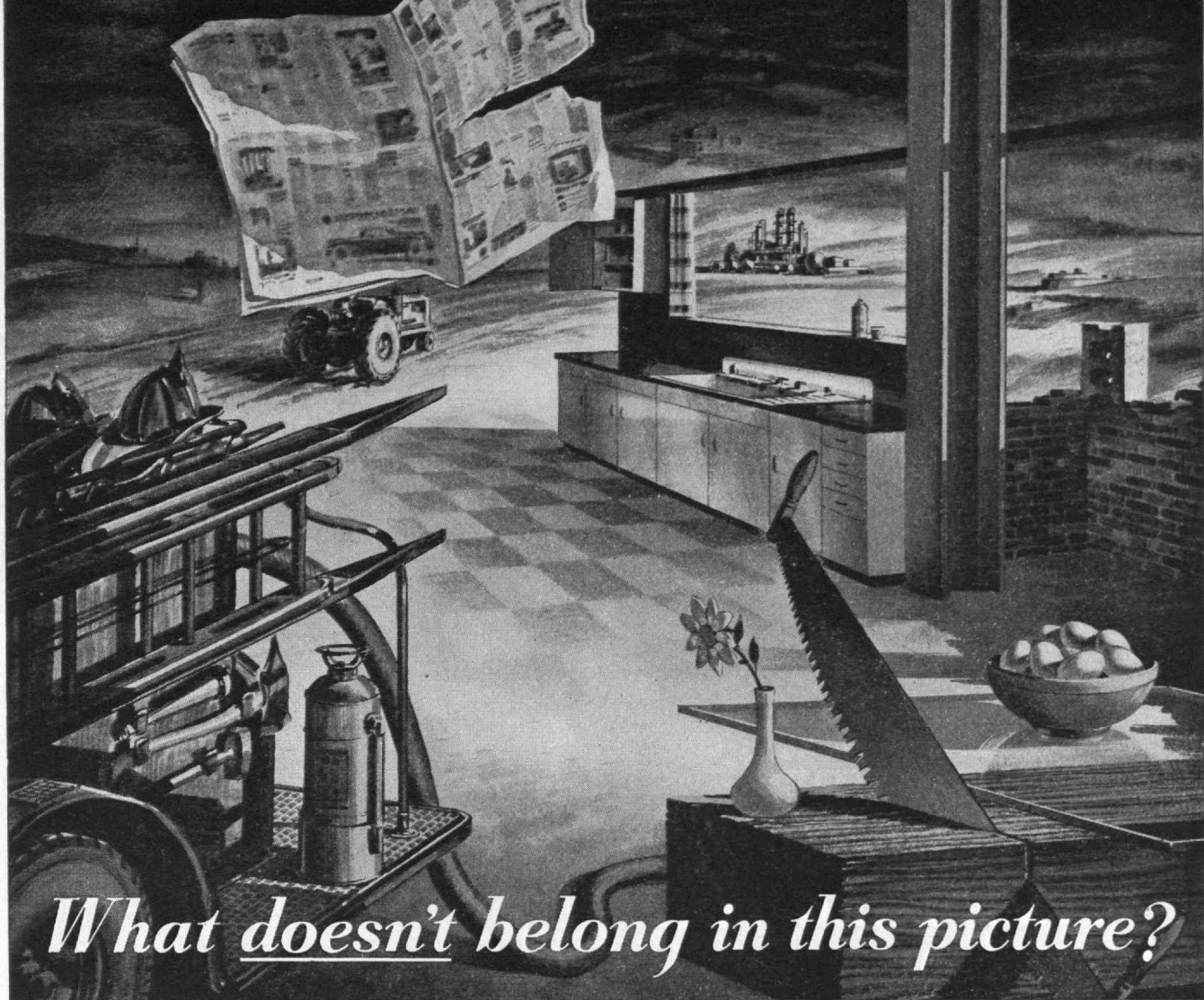
Working beside seasoned research people, these young scientists gain firsthand experience in industrial research practices and techniques. Besides gaining much practical experience and valuable counsel, they earn while they learn.

Through this co-operation with colleges, Westinghouse hopes to aid students in choosing the scientific field they should enter, and, at the same time, strengthen their foundation for graduate school work.

Westinghouse Electric Corporation, Pittsburgh, Pennsylvania.

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What doesn't belong in this picture?

All but one of the objects in this picture have something in common. They were affected directly or indirectly by the kind of products Norton and Behr-Manning make. *Can you find the stranger?*

The sink? No! The metal under its porcelain coat was finished by various Norton or Behr-Manning abrasive products before it reached its present form. And its gleaming white surface was baked on by a process that calls for Norton special refractories.

The newspaper? No! Norton pulpstones ground the wood from which it's made. Norton and Behr-Manning abrasive products helped build the press that printed it.

The eggs? Surprisingly, no! Many farmers clean them with Behr-Manning coated abrasives.

Neither is it the oil refinery, the farm tractor, the fire truck, or the woodsman's saw.

The stranger in the picture is the hand-picked wildflower... just as Nature made it. Remember any man-made product... whether of metal, wood, paper, cloth, leather, ceramics, or plastics... depends on abrasives, abrasive products, refractories, or grinding machines that bear such well-known trade-marks as Norton and Behr-Manning... world's largest manufacturers of abrasives and abrasive products.



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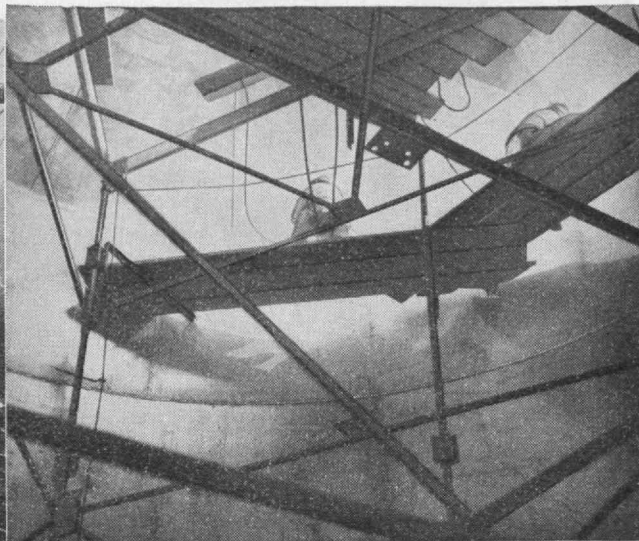
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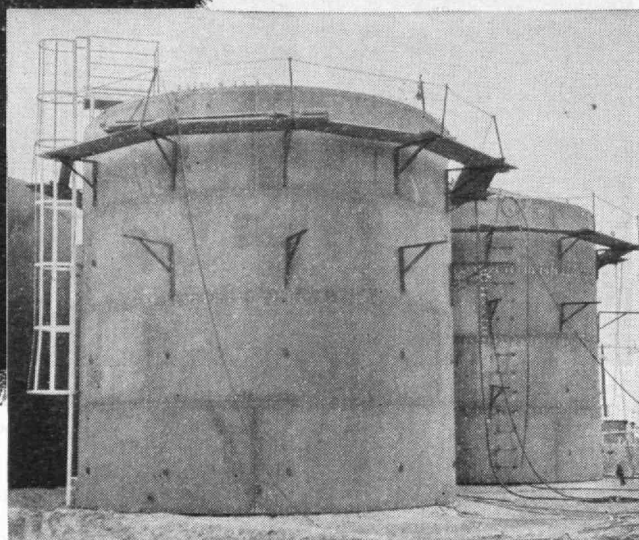
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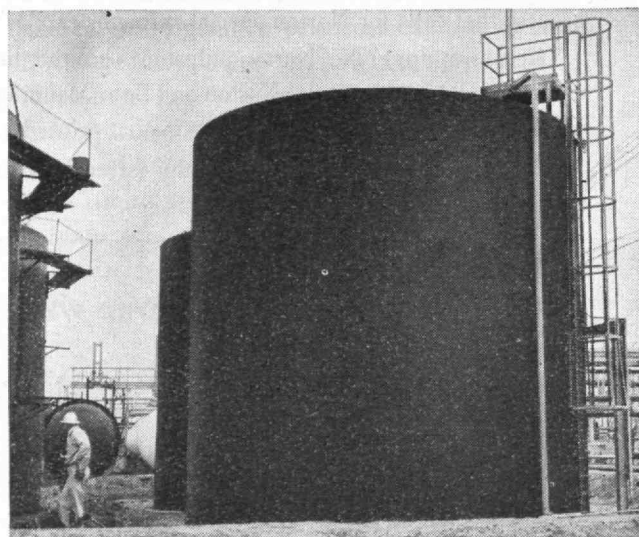
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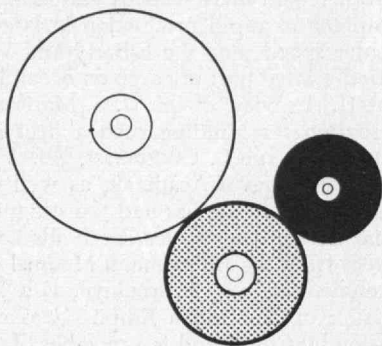
Graver welders at work on field erection of nickel-clad chemical tanks.



Exterior view of two butt-welded, nickel-clad storage tanks.
Capacity: 2,100 bbls. each. Size: 25' O.D. x 24'.



Two Graver nickel-clad tanks adjacent to those recently erected.
Same capacities and dimensions as new tanks above.



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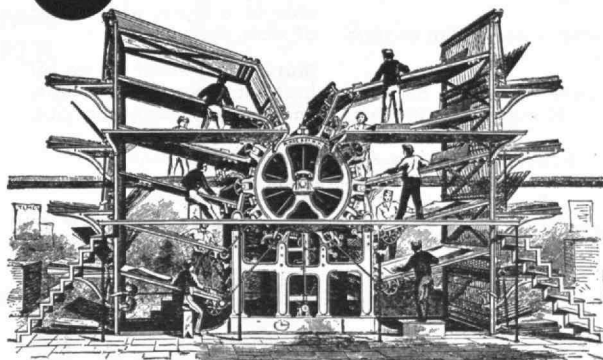
Its high strength helped to make possible the free-flowing, quick-drying ink required for high-speed operation of these presses. The low loadings possible with carbon black give the ink the required length of flow, while still contributing great covering power and the jet blackness necessary for instantaneous, legible impressions.

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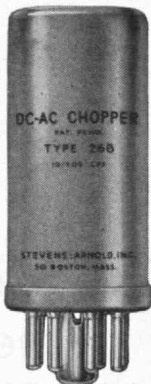


This 18th century press required 25 men to produce 1500 sheets per hour, while today's rotary press produces more than 50,000 complete newspapers an hour.

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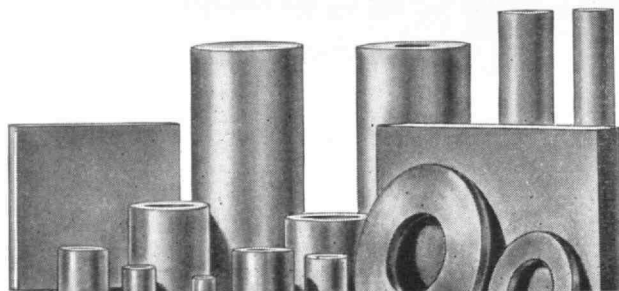
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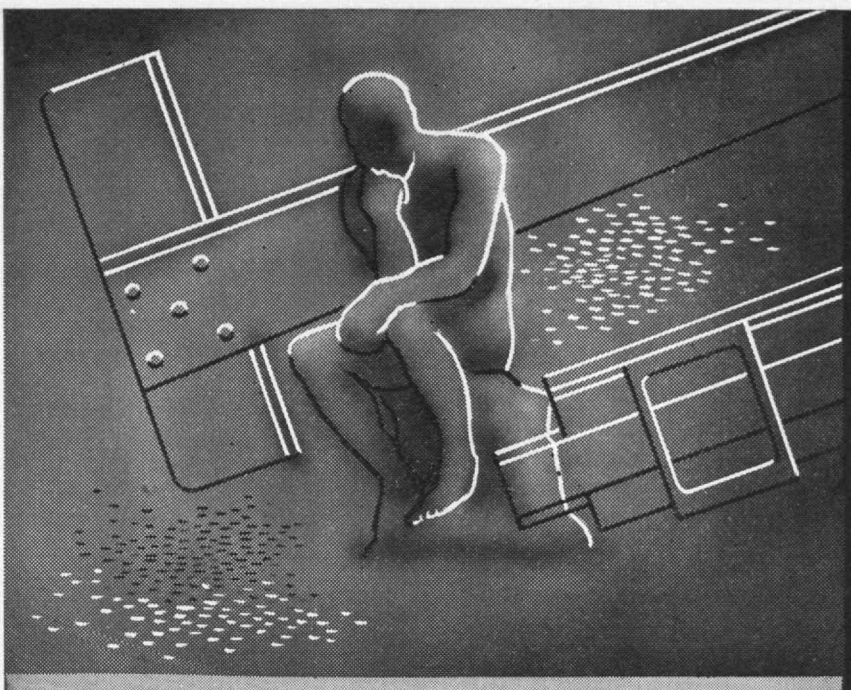


THE TABULAR VIEW

Merchant Marine. — Under present circumstances, the nation's merchant marine needs vessels of such design as to be capable of rapid production in large quantities and of greater speed than the Liberty and Victory ships which carried a large part of cargo on ocean lanes during World War II. A review of the U. S. Maritime Administration's program for building such a fleet is described (page 407) by EDWARD L. COCHRANE, '20. A graduate of the United States Naval Academy, as well as of Technology, Admiral Cochrane has had a distinguished career in naval and educational circles. He holds honorary doctorate degrees from the Hahnemann Medical College and the Polytechnic Institute of Brooklyn, is a knight commander, Order of the British Empire, was awarded the Grand Cordon by China, and is a member of the National Academy of Sciences and the United States Naval Institute. He served on the staff of the Commander Scouting Force of the United States Fleet from 1933 to 1935; between 1935 and 1939, was administrator for the Bureau of Construction and Repair; served as naval attaché at the American Embassy in London; became chief of the Bureau of Ships in 1942; and subsequently was appointed chief of the material division, United States Navy. He became head of the Institute's Department of Naval Architecture and Marine Engineering in 1947, and is now on leave to serve as Maritime Administrator.

Impressive Implement. — A major contribution to the Institute's educational and research facilities will be dedicated during a three-day symposium on hydrodynamics to be held on June 4 to 6. First of the major projects to be completed by funds raised during the recent Development Fund Program, the new Hydrodynamics Laboratory provides extensive laboratory facilities for teaching and research in hydrodynamics. The new laboratory is an impressive implement, indeed, whose purpose, planning, and utilization are described (page 399) by Professor ARTHUR T. IPPEN of the Department of Civil and Sanitary Engineering, Director of the Hydrodynamics Laboratory. Native of London, Dr. Ippen was graduated from the Technical University of Aachen, Germany, in 1931, and then became exchange fellow at the Institute of Hydraulic Research at the University of Iowa. He was teaching and research fellow at the California Institute of Technology from 1934 to 1937, from which institution he received the M.S. and Ph.D. degrees in 1935 and 1936, respectively. He joined the faculty of Lehigh University in 1938, and became a member of the Technology Faculty in 1945 as associate professor, and in 1948 he was promoted to full professor.

Towing Tank. — Completed a few months ago, the Institute's Ship Model Towing Tank has been in use by students since last February. The tank, a significant portion of the Hydrodynamics Laboratory, will be dedicated at a symposium on June 4 to 6. Interesting features of the tank are described (page 404) by MARTIN A. ABKOWITZ, Assistant Professor of Naval Architecture. Professor Abkowitz received the S.B. degree in Naval Architecture from M.I.T. in 1940 and the M.A. degree in physics in 1949 from Harvard, where he is a candidate for the Ph.D. degree. During World War II he was an officer in the United States Army, and from 1946 to 1949 was physicist at the David Taylor Model Basin in Washington, working on problems of ship control.



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MAIL RETURNS

More M.I.T.

FROM WESLEY HALLIBURTON, '92:

Two volumes of The Review lie on my table, but one must search inside the volumes to determine if they are a scientific school publication or just a technological publication. Why not the following on the cover?

M.I.T.

Technology

Review — July 1951

I feel a high sense of values in the work that M.I.T. is doing. I consider it the greatest technological school of the day, including the world.

Memphis, Tenn.

Instruments Intact

FROM THOMAS DOANE PERRY, '00:

I have read with great interest the article "The Blasted Bore" in the January Review, particularly as I seem to be the family member on whom have been wished most of the data relating to the genealogy and history of the clan. The family story of the Hoosac Tunnel, to which a certain amount of pardonable luster has been added in the retelling through the generations, runs about as follows:

My grandfather, Thomas Doane, was employed as chief engineer in October, 1863, shortly after the project had been taken over by the state. He reduced to a straight line the earlier curved course that had been projected, and completed the survey with two specially made transits, more accurate than had been previously available. Grandfather was a determined individualist of keen insight, and resigned in 1867, because of the meddlesome political control — a control which became so intolerable, that a private contractor was engaged late in 1868. After six years in railroad building in the West, grandfather was re-employed on the Hoosac Tunnel by the private contractor, Shanly. He ran the first engine through the tunnel in 1875.

The two transits, used for tunnel alignment, are preserved: one at the Blue Hills Observatory, near Boston; and the other at Doane College, Crete, Neb., where it is mounted and available to verify sidereal time.

Moorestown, N.J.

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It is only natural that the people of Union Carbide pioneered in the production of allethrin on a commercial scale. For they were already making most of the needed chemical ingredients.

As a result, the people of Union Carbide are already providing allethrin in ever-increasing quantities to manufacturers of household and dairy sprays. And researchers all over the country are now engaged in testing its value for the control of agricultural pests and for other purposes. Other Union Carbide chemicals are important ingredients in many other insecticides and fungicides. One or more of them may have a place in your future plans.

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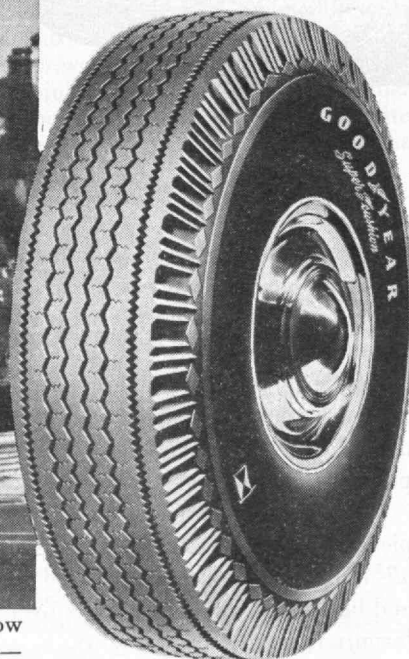


Automobile manufacturers test-drive their cars on all kinds of roads, such as this one at Cheyenne Canyon, Colo. These automobile manufacturers in Detroit, motor capital of the world, really know tires and put more Goodyear Super-Cushions on the new cars than any other tire.

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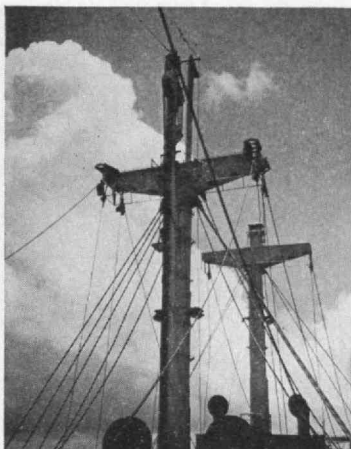
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C. E. Patch, '02

THE TECHNOLOGY REVIEW

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EDITED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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Circulation Manager: D. P. SEVERANCE

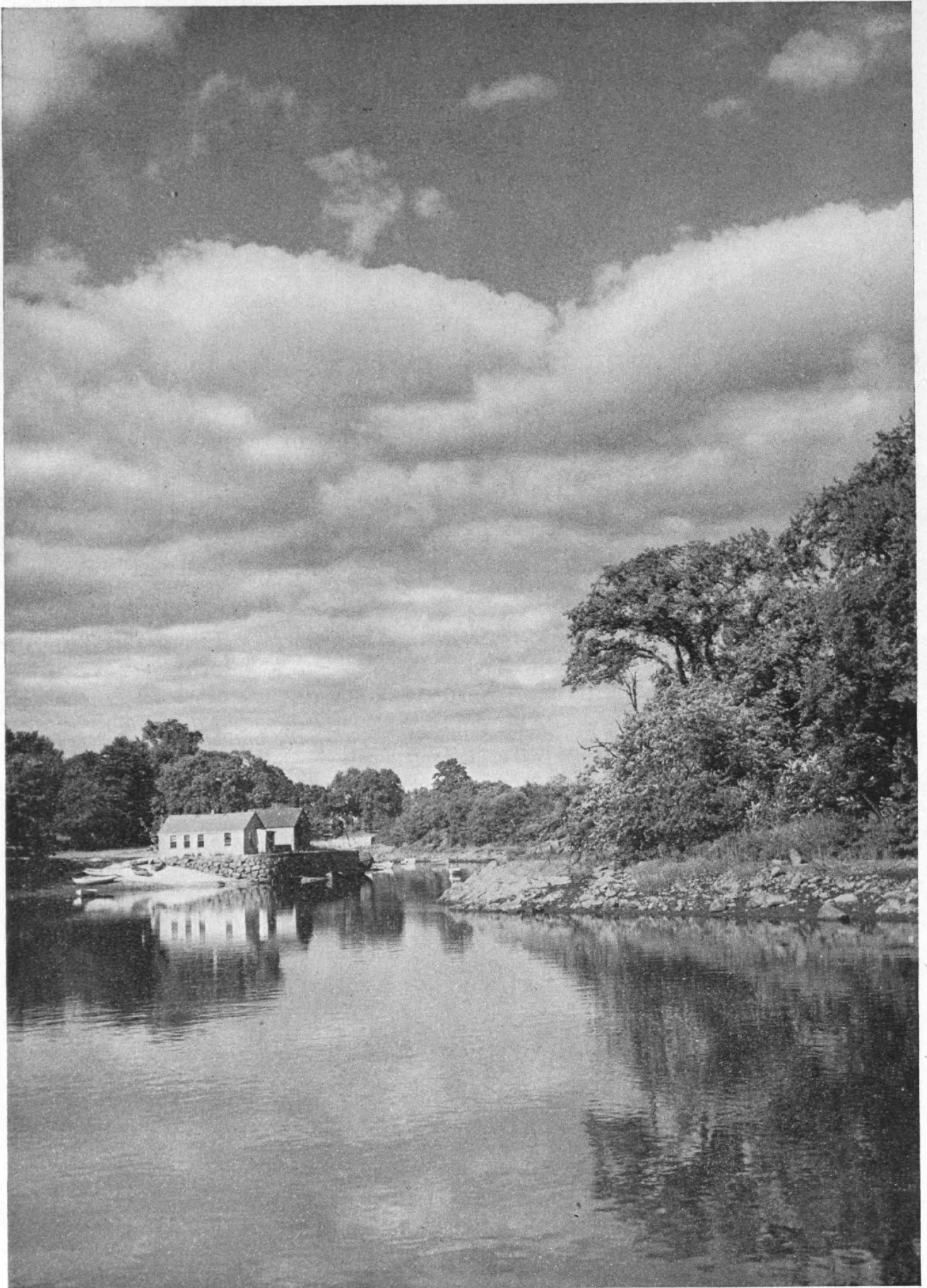
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Publisher: H. E. LOBDELL

Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 50 cents a copy. Annual subscription, \$3.50; Canadian and foreign subscription, \$4.00. Published for the Alumni Association of the M.I.T.: John A. Lunn, President; H. E. Lobdell, Executive Vice-president; Horatio L. Bond, Allen Latham, Jr., Vice-presidents; Donald P. Severance, Secretary-Treasurer. Published at Hildreth Press, Inc., Bristol, Conn. Editorial Office, Room 1-281, Massachusetts Institute of Technology, Cambridge 39, Mass. Entered as second-class mail matter at the Post Office at Bristol, Conn. Copyright, 1951, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect change of address, for which both old and new addresses should be given.



Raymond E. Hanson

"Then, if ever, come perfect days . . ."

—James Russell Lowell

THE TECHNOLOGY REVIEW

Vol. 53, No. 8



June, 1951

The Trend of Affairs

Half Starved

SEMISTARVATION has occurred widely, both chronologically and geographically, throughout the history of the world. Famines have been caused not only by wars, but also by drastic crop failures, or even by chronic inability of the economy in a given region to support the population.

When first deprived of sufficient food, the human being suffers severe discomfort and disabling weakness. Why, then, have large numbers of people been able to survive for extended periods of time on famine rations? Why have such half-starved populations been able to pursue fairly normal activities, including muscular work? A firm answer to these previously baffling questions has now come from pioneer intensive studies of semistarvation, with human volunteers as subjects, conducted at the University of Minnesota. The 30-odd volunteers were intelligent, co-operative men. They were kept under continuous observation, and were subjected to exhaustive biochemical tests and clinical examinations. Their food intake was regulated exactly. Because of this thorough control of the experiment, the effects of semistarvation upon the human being were delineated much more clearly than had previously been possible on the basis of random observations of actual famine victims.

The subjects at the University of Minnesota ate a diet simulating famine rations in northern Europe. This regimen caused a loss of some quarter of the body weight in the course of six months, along with the appearance of other classical signs and symptoms of semistarvation. But, at the same time, the volunteers effected several marked physiological adjustments, which tended to bring them toward equilibrium with their reduced food consumption, by diminishing their need for energy derived from food.

The energy demanded for muscular activity was markedly curtailed. Part of this curtailment was traced to voluntary elimination of much of the needless, unproductive muscular activity that the human being usually indulges in quite freely, and also spontaneous performance of necessary acts in ways that minimized expenditure (such as climbing stairs one step at a time). An additional saving in energy used for muscular work — and this observation is indeed surprising — resulted from the fact that the energy spent to accomplish standardized muscular tasks decreased in direct proportion to loss of body weight.

Another reduction in energy needs of the semi-starved men resulted from decreases in basal metabolic rate. This rate measures the energy used to maintain the body at complete rest, with no overt muscular activity whatsoever. Part of this energy saving had been expected because of the diminished body mass resulting from emaciation. But an unexpected energy saving in this category was traced to a definite decrease in the metabolic intensity of the remaining body tissues.

Finally, the energy used by the heart was reduced, as the work done by this organ dropped to half the normal level. The resultant energy saving was considerable; the heart is a sizable muscle group that is constantly at work, and claims a substantial proportion of total energy supplied.

As a result of these marked spontaneous decreases in energy requirements, the University of Minnesota subjects, like many actual famine victims, were able to remain active and to perform a variety of tasks. This research explains quantitatively how their physiological adjustments to a deficient food intake were made. Thus is afforded greatly improved understanding of one facet of the recognized resiliency of the human organism in adapting to adverse conditions.

Blowdown Tunnel

FOR many years the Institute's Department of Aeronautical Engineering has been able to conduct effective research on aircraft operating at subsonic velocities through facilities provided by the Wright Brothers Wind Tunnel and smaller tunnels available for educational purposes. Since the end of World War II, completion of the Naval Supersonic Laboratory and expansion of the facilities of the Gas Turbine Laboratory have made possible research at supersonic velocities. Facilities in the transonic range, where velocities of from 600 to 1,000 miles per hour are encountered, have not been so well provided, but this omission is now being rectified. A transonic wind tunnel is under construction at Technology to facilitate research and instruction in aerodynamics in this speed range. The design and construction of the new tunnel are under the direction of Joseph Bicknell,'34, Associate Professor of Aeronautical Engineering, assisted by Harold P. Hilberg, a research associate in the Department of Aeronautical Engineering.

Supersonic and transonic tunnels may be either continuous or intermittent in operation. The continuous type provides a steady flow of air within its range of flow, but this is accomplished by motors and blowers of large power requiring high initial and operating cost. The intermittent, or blowdown, type of tunnel provides flow for a short period—usually between 15 seconds and five minutes—and requires suitable recording equipment to obtain test data rapidly during the short operating period. In one type of intermittent tunnel, the test chamber is connected to a large tank which is evacuated by pumps. A valve connecting the test chamber with the tank is then opened and the air rushing into the tank through the tunnel provides transonic air flow for the operating period. As long as the pressure in the tank is below a certain value, its variation is not felt in the test section; hence, test section Mach number, true speed, and density automatically remain constant.

In the other type of intermittent tunnel, the air is compressed in the tank and exhausts to the atmosphere during the blowdown. The test section conditions would vary unless a regulating valve or throttle were inserted between the tank and the tunnel to keep a constant pressure at the tunnel as the tank pressure decreases. As the air expands in the tank, its temperature drops so that some sort of heat supply must be used to maintain constant temperature during blowdown. Using the tank compressed, instead of evacuated, roughly doubles the Reynolds number, or the effective scale of the model, through higher density of air in the test section. Current designs favor this type of operation.

With a suitable tank (which represents a large part of the cost of an intermittent tunnel) already available in the Wright Brothers Wind Tunnel, design work was predicated on its use as the storage tank. The test section should be large enough for aeroelastic investigation and for airplane design evaluation and research. A section of about three square feet in area is felt adequate, and, with the size of tank available there is a running time of 15 seconds. Allowing five seconds for the pressure-regulating system to

come to equilibrium, 10 seconds remain for testing. With proper recording equipment, the same amount of data can be obtained in this period as is obtained in 15 minutes in the Wright Brothers Wind Tunnel.

During the new transonic wind tunnel's operation, air in the Wright Brothers Wind Tunnel will be compressed to approximately 30 pounds per square inch gauge, using the compressor originally installed to compress and evacuate the tunnel. Compression between blowdowns will take approximately one hour. The air is dried as it is compressed to prevent condensation as it expands through the transonic tunnel.

The test section is octagonal, 22 inches flat to flat. A model support system varies the attitude of the model continuously during blowdown; and the forces and moments are measured on a "sting" balance with resistance strain gauges, and recorded on oscillographs. The air from the tunnel exhausts in a sound-treated vertical stack.

It is expected that the new facility will be self-supporting as a result of research and design evaluation testing for the government or industry, and that the tunnel will be put into operation late this fall.

Hydraulic Valves Improved

THE satisfactory performance of many control systems often requires servomechanisms of considerably greater accuracy and speed of response than have been previously available. For example, the acceleration requirements are sufficiently severe in certain instances so that no existing electric motors can be used, and the chance of developing satisfactory motors seems rather remote. Accordingly, the Dynamic Analysis and Control Laboratory, under the direction of Professor John A. Hrones,'34, of the Department of Mechanical Engineering, has conducted a program of research on, and development of, flow valve-controlled hydraulic servomechanisms. This program has resulted in the development of a number of high-performance servomechanisms and in the accumulation of a store of information on hydraulic control, much of which has not been easily available and some of which is believed to be new.

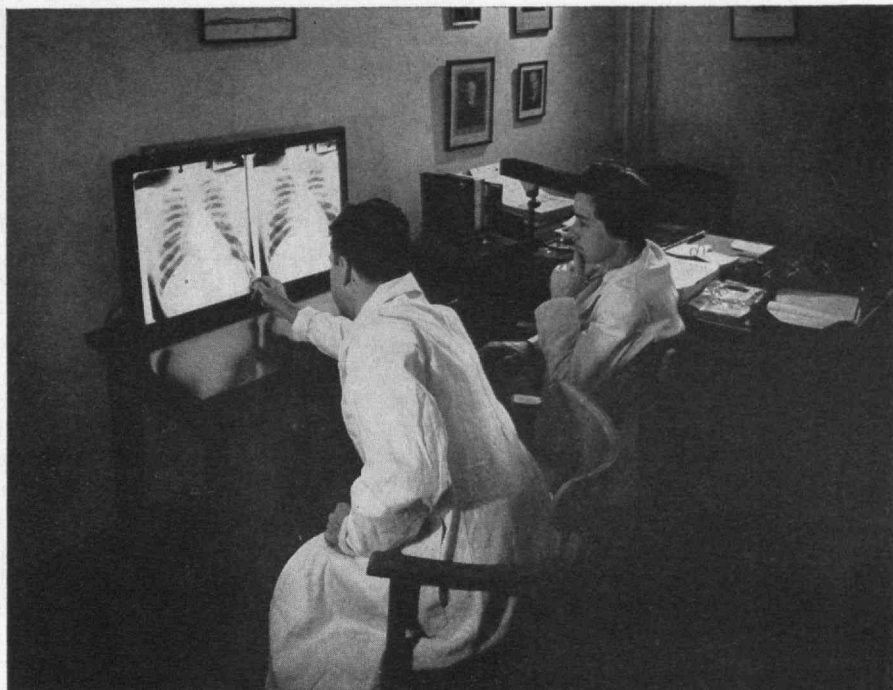
In designing a hydraulic control valve for servosystems or similar applications, it is important to know the axial force necessary to operate the piston. This force has three principal components: inertial force, which is easily calculable; friction, which can be approximately estimated; and the force produced by the flow of liquid through the metering orifices of the valve, for which virtually no data are available. In some cases, a fourth force which is proportional to the rate of change of flow through the valve may be important since it may cause instability and self-oscillation in the valve. These forces were studied mathematically and experimentally for a four-way type of valve by Shih-Ying Lee,'43, and John F. Blackburn, both of the Division of Industrial Cooperation, in the hydraulics section of the Dynamic Analysis and Control Laboratory.

The analysis of the steady-state forces led to a new type of valve design in which the square land chamber configuration is replaced by a chamber piston shaped somewhat like a turbine bucket with the

Trend in Occupational Medicine

Believing in the old adage that "an ounce of prevention is worth a pound of cure," the Institute's Medical Department has placed considerable emphasis, throughout the years, on keeping students, Faculty, and staff members in good health, and on eliminating health hazards of all kinds as much as possible. With the Institute's rapidly expanding research activities, the problems of analysis and correction of hazards caused by toxic chemical, radiological, or dust particles, as well as the more subtle problems of unusual occupational stress, such as noise and lighting, began to assume sufficient importance as to warrant special precautionary measures. As a result, the Occupational Medical Service was established on a part-time basis in 1947 at the request of Dr. Dana L. Farnsworth, M.I.T. Medical Director, and was expanded to full-time service in 1949 with the appointment of Dr. Harriet L. Hardy, Assistant Medical Director in charge of Occupational Medical Service.

In keeping with the trend to enhance the preventative rather than the corrective aspects of modern medicine, the work of this Service has been steadily expanded, and new laboratory facilities have just been completed on the second floor of Homburg Infirmary. Dangers to workers associated with disposal of radioactive and unusually toxic waste materials are studied, and safeguards recommended by the Occupational Medical Service working in consultation with the Institute's safety engineer. The illustration shows Dr. Ivan D. Frantz, Jr., Radiological Medical Officer, and Dr. Harriet L. Hardy, Director of Occupational Medical Service, studying a chest x-ray.



M.I.T. Photo

Although primarily intended to detect industrial hazards and recommend means for their elimination, an important and logical activity of the Occupational Medical Service is to provide instruction for undergraduate and graduate students so that they may learn what is necessary for protection from unnecessary occupational hazards. To date, several informal seminars have been held at the request of various members of the Faculty, resulting in sessions in the Departments of Chemistry, Metallurgy, and Sanitary Engineering. It is planned to offer a term course in occupational hygiene in the Graduate School which will provide sufficient background and technical data to allow a student of engineering to carry out consultation service in industry.

sleeve cut out to form an extension of the downstream chamber. This design gives cancellation of the flow forces within the limits of manufacturing imperfections and is but slightly more difficult to make than the conventional valve.

In servomechanisms, it is common practice for hydraulic valves to be operated by electric torque motors driven by vacuum tubes. Because tubes are used as the control elements, the power to the torque motors is limited to a few watts, and this restriction, plus the inherent design limitations of electromagnetic devices and the large force required to stroke a square land piston, have, in the past, limited the outputs of single-stage valves to perhaps one kilowatt; higher outputs were controlled by using two or more valves in cascade. The program of the Dynamic Analysis and Control Laboratory has resulted in the development of a four-way hydraulic valve which operates satisfactorily at high speeds, free from oscillation, and with moving parts inherently balanced. The new valve design extends the speed and precision of performance possible with servomechanisms.

Major contributions to this development were made by Raymond D. Atchley, a research assistant in the Department of Electrical Engineering, and Albert C. Hall, '37, former Director of the Dynamic Analysis and Control Laboratory. The work was supported by the Naval Bureau of Ordnance.

All Men Are Unequal

BOTH in research and industry, the problem of measurement in food flavor evaluation has completely mystified and baffled the devotees of mechanism. It would be desirable to place measurements in this field on a truly objective basis through use of physical measuring techniques instead of depending upon the human being as a measuring instrument, especially since subjective evaluations by two different persons are never exactly alike. At first blush, it may seem strange that suitable measuring techniques have not been developed. But until more information about the senses of taste and smell becomes available, the human being will continue not only supreme but also unique as the instrument with which taste and smell are evaluated.

Why is the measurement of taste and smell, and therefore research on the human being as a measuring instrument, important? If foods do not taste and smell good, they will not be eaten. If foods are not eaten, they can contribute nothing to our well-being. In spite of the influence of advertising, palatability and, to an important extent, food flavor are the heart of competition in the food industry. Consequently, if foods, as produced by the food industry, do not taste and smell good, they will not be purchased. The food industry would die of starvation and, of necessity, all of us would revert to farming, hunting,

and fishing. The human being as a measuring instrument of taste and smell is, therefore, a key to our general enjoyment of living and to the continued success of our food industry.

During the past four years in the Department of Food Technology, Ernest E. Lockhart, '34, Assistant Professor of Food Chemistry, has been studying the human being—his similarities to and differences from other human beings, his sensitivities, the relationship of physiological and environmental factors to the accuracy and dependability of his responses to test stimuli in the form of pure chemical compounds and composites, such as foods—in order to determine his potentiality and usefulness in handling taste and smell problems that are ever present in the food industry. In the field of human instrumentation, just as in other fields, instruments must be understood and calibrated. In the past, understanding has been relatively simple but calibration was difficult. Because of new conceptions of experimental design and recent developments in statistical analysis, objective treatment of subjective reaction and response is possible. The human instrument can be calibrated with less difficulty and with greater assurance of adequate performance now than was possible before.

All human beings are different. Although any one individual may serve as an instrument for determining differences in food products or changes that may have occurred during processing or storage, it would be unwise to predict general public reaction or consumer acceptance on the basis of one judgment. Test situations arise in which many individuals are used. Responses may be equally divided, unequally divided, or completely in agreement. Here, again, proper use of experimental design and statistical analysis provides meaningful results interpretable in terms of expected consumer reaction. But until we know more about the senses of taste and smell, it will be impossible to devise instruments to evaluate such factors on a quantitative basis, and the human being will remain as the unique, if qualitative and subjective, instrument available for evaluating the senses of taste and smell.

Out of Joint

SIGHING, snoring, hiccuping, yawning, and joint cracking are virtually universal facets of human behavior. Nevertheless, the mechanisms underlying these acts are not well understood, and what useful function they serve, if any, is still more obscure. Sighing, snoring, hiccuping, and yawning are classified in physiology textbooks as "modified respiratory movements." Yawning involves, in addition to the respiratory act, a stretching of certain muscles of the head and neck. Yawning is frequently accompanied by what we know as stretching—the hyperextension of arms, legs, or other parts of the body. Yawning and stretching in turn often involve the remaining obscure aspect of human behavior, namely joint cracking. In some persons the jaw may crack during a good, wide yawn; in others, stretching of the arms or legs may cause joints in these members to crack. Besides stretching, the flexing of a joint that has been at rest for some time often causes cracking.

Despite the ubiquity of joint cracking, the nature and significance of this phenomenon have not been explained, except on largely inferential grounds. A recently published discussion of the subject suggests that cracking may be caused by fibrositis, which is inflammatory enlargement of fibrous tissue in joints. Either hyperextension, or flexion, of a joint stretches its fibrous tissue. Therefore it is suggested that when fibrositis is present, such stretching produces the distinct noise of joint cracking. Although pronounced fibrositis is associated with chronic rheumatism, milder degrees of the condition have been characterized as "the most common ailment to which human flesh is heir." This concept, and the proposal that fibrositis is the cause of cracking, together harmonize with the recognized ubiquity of cracking joints.

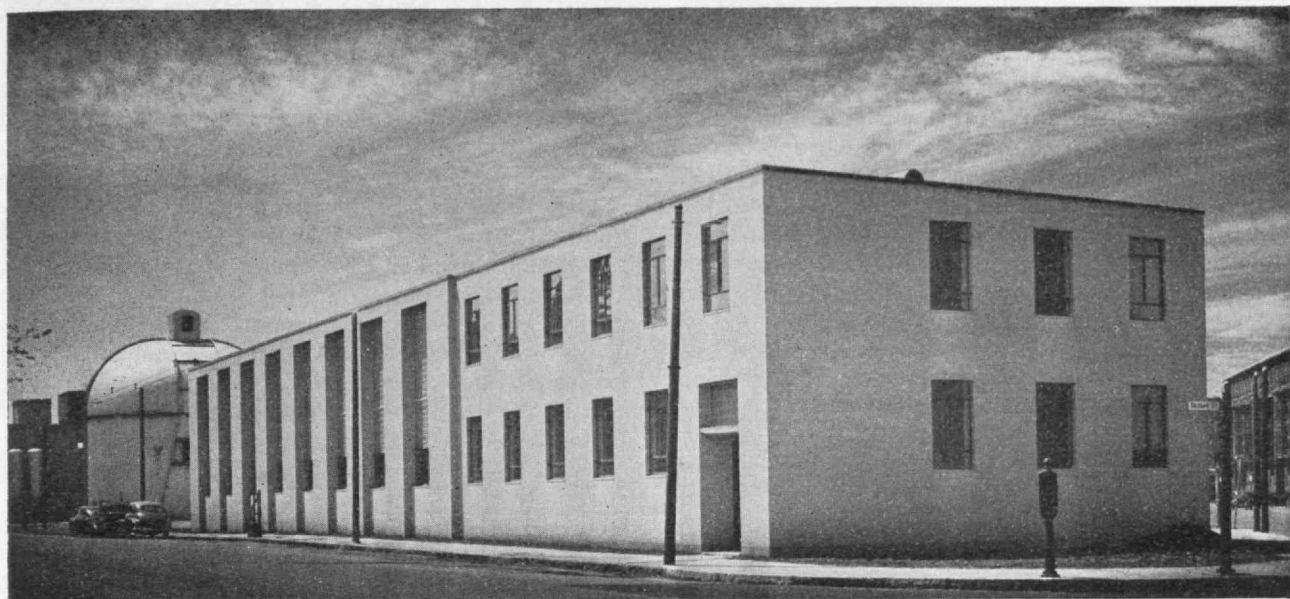
Two environmental conditions are believed to predispose toward the cracking of joints. One of these conditions is low ambient temperature. This statement will not surprise those who possess cracking joints, as joint cracking is usually acknowledged to occur more frequently in cold weather. But the other major predisposing factor stated is somewhat startling; this is ionized air, as existing during electrical storms. If you hear a faint mysterious noise during the season when electrical storms prevail, it may be distant thunder, or it may be a concerted cracking of your neighbors' joints.

Atmospheric Tides

AN investigation of the dynamical tides in the earth's atmosphere has recently been completed at the Computation Laboratory of M.I.T. by Luigi G. Jacchia, a research associate in Electrical Engineering, and Zdenek Kopal, Associate Professor of Computational Analysis, under the sponsorship of the National Advisory Committee for Aeronautics, with the aid of M.I.T. large-scale computing machines.

On the earth's surface, the tide-producing force of the moon exceeds that of the sun by a factor of 2.2, and the observed amplitudes of the lunar and solar components in ocean tides are approximately in that ratio. The situation is radically different in the case of tides of the atmosphere, where the solar component exceeds the lunar by a factor of 45. This fact can be explained by resonance; that is, one of the free periods of oscillation of the atmosphere, as a whole, is so close to 12 hours that the pressure oscillations with the solar period are greatly enhanced. The proximity to resonance makes it possible to use the pressure tides as a tool for investigating the distribution of temperature in the upper atmosphere (between 40 and 100 kilometers) which is almost inaccessible to any direct kind of measurement. The investigation at Technology has resulted in establishing a standard temperature profile which agrees with the direct temperature measurements in the lower atmosphere, is consistent with other indirect evidence pertaining to the upper atmosphere, and accounts quantitatively for the observed atmospheric tides.

A continuation of this investigation, under the sponsorship of the National Advisory Committee for Aeronautics, is being planned in order to learn more about the dynamics of the terrestrial atmosphere.



All M.I.T. Photos

The New Hydrodynamics Laboratory

*First Unit to be Completed under the Development Program
Brings to M.I.T. New Training and Research Facilities
for Studying the Mechanics of Liquid Flow*

By ARTHUR T. IPPEN

THE new and extensive laboratory, to be known as the Hydrodynamics Laboratory, is the first to be completed of the projects envisioned as essential under the recent successful drive for M.I.T.'s expansion. It brings to the Institute facilities long considered necessary for basic training as well as for research in hydrodynamics. A new laboratory for the experimental study of the mechanics of liquid flow, distinct from the usual facilities provided for undergraduate instruction, was proposed for M.I.T. even before World War I, as plans which Professor Emeritus George E. Russell, '00, of the Department of Civil and Sanitary Engineering, still possesses will prove. However, it was not until after World War II that new plans were drawn up, which culminated in the erection, during the years 1949 and 1950, of the new Hydrodynamics Laboratory which will be administered by the Department of Civil and Sanitary Engineering.

Purpose of the Laboratory. In line with the emphasis which research is given in the over-all educational process at M.I.T., the laboratory is planned primarily for the pursuit of fundamental studies in the many branches of hydrodynamics. Often such studies seem somewhat removed from the immediate and specific problems faced by the practicing engineer. Frequently they are of the type for which industrial and governmental laboratories do not usually find time, because of the pressure of more immediate and specific production and design problems, even though the de-

sired information has great practical value. The integration and co-ordination of new knowledge into generally applicable principles, therefore, seems to fall primarily into the domain of the research laboratories at institutions such as M.I.T. Broadly speaking, the new Hydrodynamics Laboratory will be devoted to such research objectives.

More specifically, studies in the laboratory will be concerned with fundamental problems on the nature of surface resistance, internal flow patterns, turbulent flow, and associated mixing processes; they will deal with the formation of surface waves and of surface profiles in open-channel flow as a function of geometric boundary conditions, with the forces exerted on immersed bodies, producing transport of sediments in streams, and the transfer of matter and properties in industrial processes.

Studies in these fields of fluid technology again often call for the development of new measuring techniques and instruments. The laboratory will thus provide a training center for staff members drawn from varied professional backgrounds. The resulting interchange of ideas, derived from the various engineering sciences, will give a more concerted and organic approach to a problem, of benefit not only toward its solution but also to a more universal professional experience of the staff.

Planning the Building. The M.I.T. Hydrodynamics Laboratory was planned for a maximum of useful

floor space with ample headroom and with a minimum of built-in features. The location of the building was determined primarily by the desirability of adequate length for flumes and experimental piping and with a view toward future expansion. In order to keep it in the vicinity of the educational plant and other laboratory facilities east of Massachusetts Avenue, the laboratory was located along Vassar Street near Main Street — the only space available. Adequate water supply was afforded by large water-storage tanks with water circulation provided by a central pumping system. Such a system is independent of natural streams and at all times provides a flexible supply of clean water under readily controlled pressures.

The basic features of the building were further governed by the local subsoil conditions, which made it necessary to erect the building on a solid reinforced concrete mat with an average thickness of six feet to avoid differential settling. All storage tanks and the circulating pipes were thus fixed in elevation and had to be planned for above this concrete mat which forms the basement floor.

The specifications provided for unobstructed floor space for laboratory use in a hall more than 100 feet long and 50 feet wide and of double-story height — with additional space for offices, shops, darkrooms, lecture room, drafting room, and general service rooms of single-story height. Concrete water-storage tanks of more than 15,000 cubic foot capacity with circulating facilities, as well as a Ship Model Towing Tank for the Department of Naval Architecture and Marine Engineering, were to be provided for in the basement area.

The architect, Robert C. Dean, '26, assisted by T. Thomas Amirian, '32, of Perry, Shaw and Hepburn, Kehoe and Dean of Boston, solved his assignment by adopting an essentially rectangular floor plan 59 feet wide by 188 feet long, oriented along the lot line parallel to Vassar Street and extending west from Main Street. The main hall of the experimental portion is 120 feet long and occupies the western part of the building. It will be devoted primarily to research fa-

Main hall of research laboratory looking east toward two-story section with shop and demonstration laboratory on main floor, and drafting room, lecture room, and offices above.

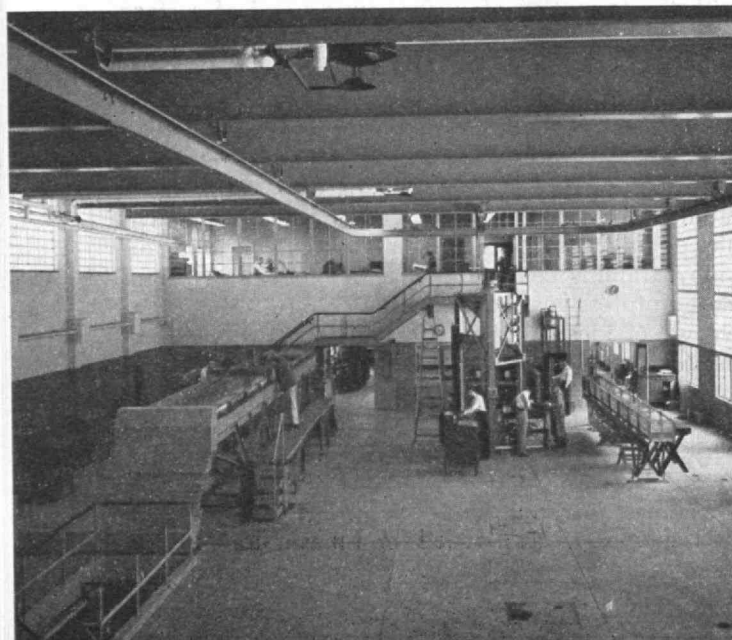
cilities of a nonpermanent nature. The basement area below this hall has the Ship Model Towing Tank extending over the full length along the south, or Vassar Street side, and the main water-storage tank along the north side. The piping circuit, consisting of galvanized pipe 18 inches in diameter for the distribution of flow to all parts of the hall above, is arranged overhead, so that except for the two tanks the basement floor area also remains available for laboratory experiments.

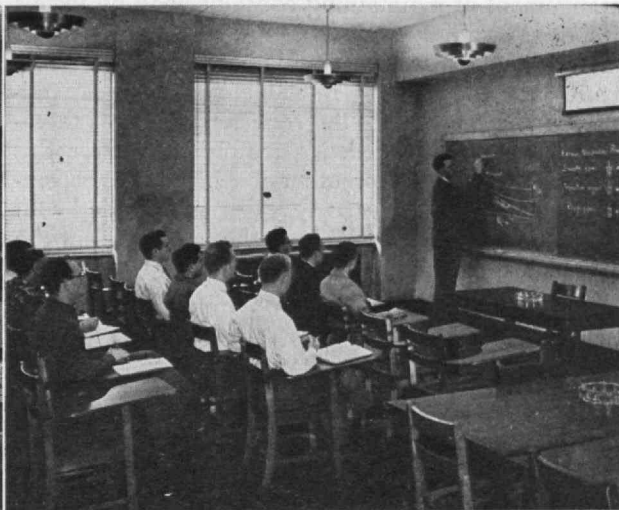
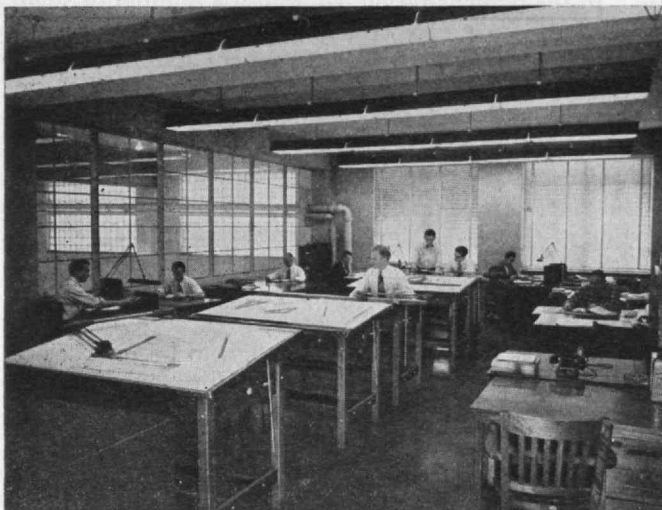
The north end of the building contains all the other utility, lecture, and office rooms. In the basement along the outside walls are the transformer room, the main switchboards, and general service space, as well as a locker room and two well-furnished darkrooms. An additional water-storage tank 42 feet in length serves a laboratory room on the first floor which will contain smaller demonstration equipment and testing facilities for instruction purposes. This room on the first floor is accessible directly from the stair well at the southeast corner and occupies approximately half of the single-story space; the other half is given over to an extensive shop with stock room along the north wall and to two smaller rooms for electronic work and instrument storage. The lecture room on the second floor accommodates 60 persons and provides for classroom and computational work in connection with laboratory experiments carried on by students. A series of offices for the staff of the Hydrodynamics Laboratory and of the Ship Model Towing Tank extends along the outside wall portions, while a large drafting room accommodates assistants and graduate students engaged on research projects. The drafting room overlooks the main hall of the building and was therefore furnished with a window extending over the entire length of the adjoining wall. For special occasions the drafting room may be connected to the parallel lecture room by removing the transite wall partition, thus providing a greatly enlarged lecture hall. From this description of the general space distribution in the building, the close correlation of all research activities with the educational process to be served simultaneously is again evident.

During the limited period in which the building has been occupied, the soundness and simplicity of the floor plan have already been amply demonstrated. The bright and varied colors utilized for all the walls in the building provide a pleasant interior for all working areas. The exterior treatment of the building is in keeping with similar structures at M.I.T.; it is simple and without pretense. Yellow brick walls conceal the steel skeleton and reinforced concrete construction; the only outstanding feature consists of the high glass-brick windows lighting the main laboratory hall along its south side and extending over the two-story height.

Future extension of the building westward, as well as the addition of two stories, was given consideration in the planning and in the dimensioning of the supporting structure. Of interest to structural men may be the fact that the main hall is spanned over the 60-foot width by the largest rolled I sections, 3 feet high, and spaced 15 feet center to center.

Built-in Facilities for Experimental Work. To keep the floor area as flexible as possible only a minimum of fixed equipment was incorporated into the build-



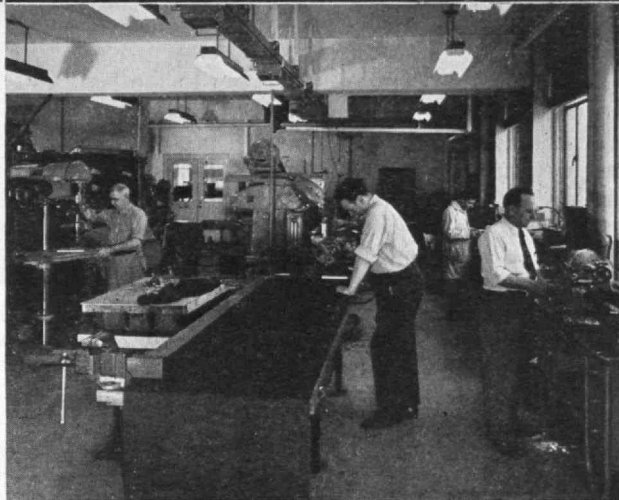


In clockwise order, these illustrations give an indication of the spaciousness and completeness of the drafting room and office for research assistants, the lecture room for teaching and laboratory computation, and the shop and stock room, with which the Hydrodynamics Laboratory is provided.

ing. This includes, of course, adequate water-circulating and storage facilities and electric power lines as primary requirements. The electric system has a capacity of 600 kilovolt-amperes, and adequate feeder lines lead to numerous junction boxes strategically placed throughout the laboratory. A large rectangular loop of galvanized steel pipe 18 inches in diameter was constructed to bring the maximum flow of 15,000 gallons per minute from the circulating pumps as near as possible to any portion of the main hall, shown in the illustration on the opposite page.

This 18-inch distribution pipe, furnished by the Crane Company, Chicago, was placed overhead in the basement to be connected to the first floor space through numerous 30-inch square openings in the concrete floor, which are normally tightly closed with special steel covers. Such openings are also arranged directly over the large water-storage tanks providing ready access, but when not in use keeping dirt and surface drainage from the tanks. A separate system was incorporated into the first floor to take care of drainage. With all water passages consisting of galvanized piping and all light excluded from the storage tanks, the water is kept clean for long periods of time. This is an important objective in view of the significant part which photography plays in practically all experimental problems.

The L-shaped main storage tank extends along the major portion of the north wall in the basement. It has a width of 8.5 feet except at one end in the northwest corner of the basement which has a section expanded to approximately 24 by 20 feet. The storage capacity is in excess of 11,000 cubic feet for this tank alone, which is augmented by the storage capacity of another tank 42 feet by 8.5 feet situated along the south wall, below the demonstration laboratory. This tank, holding 3,600 cubic feet of water, may be used separately or in conjunction with the main tank to which it is connected by a gravity return line of 18-inch galvanized pipe. Small tanks for the volumetric measurement of flow rates, up to the maximum capacity of the pumps,



are arranged at the east end of the main reservoir. They have capacities of 300 and 1,500 cubic feet. Meters employed on experimental units, as well as the two large Venturi meters, 18 inches by 10 inches, in the rectangular loop of the supply pipe (which were furnished by Builders-Providence, Inc. of Providence, R.I.) may be accurately calibrated in place against the primary standard of volume. The west end of the main reservoir is used as the suction chamber for the main circulating pumps, donated by the Ingersoll-Rand Company of New York. For flexibility in use, three pumps are employed; their rated capacities are 8,000, 4,000, and 3,000 gallons per minute, respectively, at the rated head of approximately 40 feet. These pumps may be used in parallel, or separately, to give any discharge desired up to a flow of 15,000 gallons per minute, or even greater, if the head required is lower. The line pressures may be adjusted on the discharge side of the pumps by motor-operated valves which are controlled from the testing floor. The main supply line may also be split by means of gate valves into two or three separate circuits with capacities corresponding to combinations of two pumps, or to those of the individual pumps. All pumps operate with submerged suction eliminating priming, and the entrance conditions at the intakes in the large reservoir are such as to insure steady and uniform operation. This is quite important for the prosecution of all experimental work and reduces the need for a costly

arrangement of maintaining constant head by means of special overflow tanks.

In addition to the large circulating pumps, a number of smaller and readily movable pumps are available for integration into the experimental units themselves wherever desired. To supply power for this purpose, as well as for other machinery to be employed, 220-volt electric power lines are provided with numerous junction boxes along the north wall of the main hall, along the center of the basement, and along the south wall of the demonstration laboratory. The capacities of these power lines are 200 horsepower for the basement and 100 horsepower each for the lines on the first floor. The shop area is served by a central bus duct for all machine tools. The main hall is furnished with an electric traveling hoist of the monorail type and of two-ton capacity. It is used to transport equipment normally used within the hall and to the basement storage space to which access is had through large steel hatches.

Considerable attention was given to the layout of the photographic darkrooms. Two rooms separated by a doorless labyrinth passage were finally provided; one for printing and one for developing, both with ample stainless steel sinks and built-in furniture. The photographic equipment to be utilized naturally includes cameras for different purposes and special lighting facilities for high-speed photography.

Research Facilities and Demonstration Equipment.

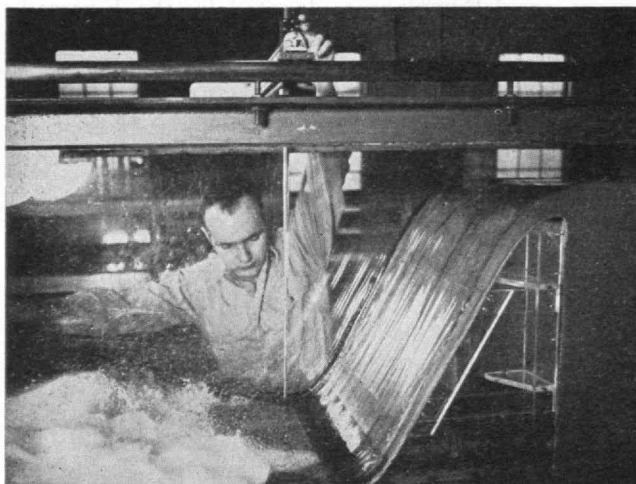
A large floor area of over 6,700 square feet is available in the main hall for almost any kind of activity in experimental hydrodynamics, with an additional area of more than 4,400 square feet in the basement, exclusive of the tanks, and of 1,500 square feet in the demonstration laboratory. This floor space will be devoted to equipment and experimental facilities for educational and research purposes with as much diversification in the field as feasible. Wherever possible, use of relatively small units will be the aim. To give an idea of the type of work planned and carried on at the present time, a short résumé of the equipment contemplated, or presently available, may be given, calling attention at the same time to the illustrations accompanying this article.

In the demonstration laboratory a number of small units will be used to explain the major problems of hydraulic design of closed and open conduits and the fundamental characteristics of pumps and turbines. The S. Morgan Smith Company provided an adjustable blade propeller pump, 12 inches in diameter, as well as an adjustable blade Kaplan turbine, 10 inches in diameter, complete with dynamometers. The setting of these is designed to permit performance tests for both units under a wide range of conditions and with accurate measurements of discharge, head, speed, and torque. These units promise to be outstanding for instruction purposes; small enough to be readily operated by students, yet large enough to give performance data in line with those of modern turbines and pumps of any prototype size.

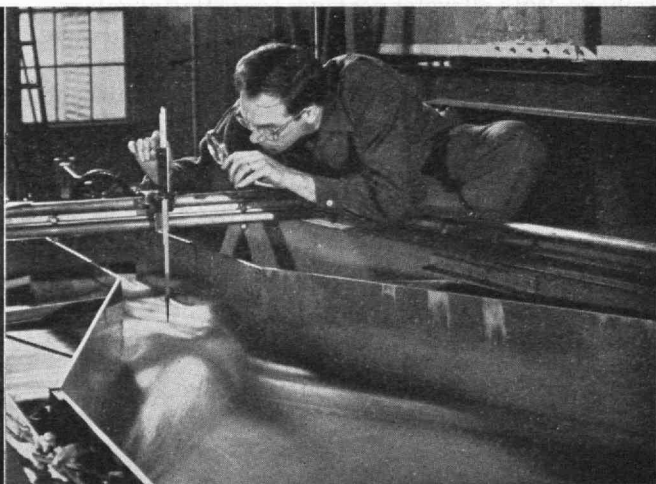
Flow phenomena in open channels, flow over weirs and dams, flow from sluices, the hydraulic jump and its modifications in modern stilling basins at the toe of spillways, will be studied in glass-walled flumes readily adaptable to these various problems. A smaller glass-wall tank is used to show the basic flow patterns of density currents, as they are found in river estuaries (where the tides periodically move a salt-water wedge upstream and under the fresh water coming down the river) or in large reservoirs (where the entering silt-laden stream moves along the bottom under the standing waters). The sanitary engineer is faced with similar problems with outfalls into rivers or lakes and in the design of settling tanks. The field of water power is included not only with studies on turbine performance but a basic hydraulic model will also demonstrate problems in the design of surge tanks and in the governing of turbines.

An electronic analog computer has been utilized with great success for such problems and is primarily employed for research on unsteady flow, where the solution of the basic equations by ordinary means is too time-consuming and precludes extensive exploration of wider applications.

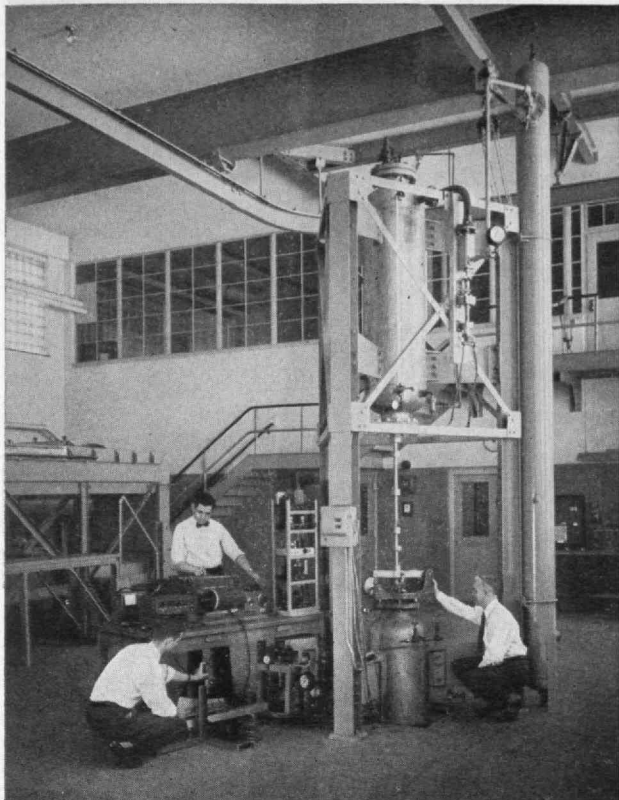
Additional equipment for the demonstration laboratory is to include apparatus to determine two-dimensional streamline patterns for flow around immersed bodies and through channels of various forms. Diverse techniques employing the Hele-Shaw



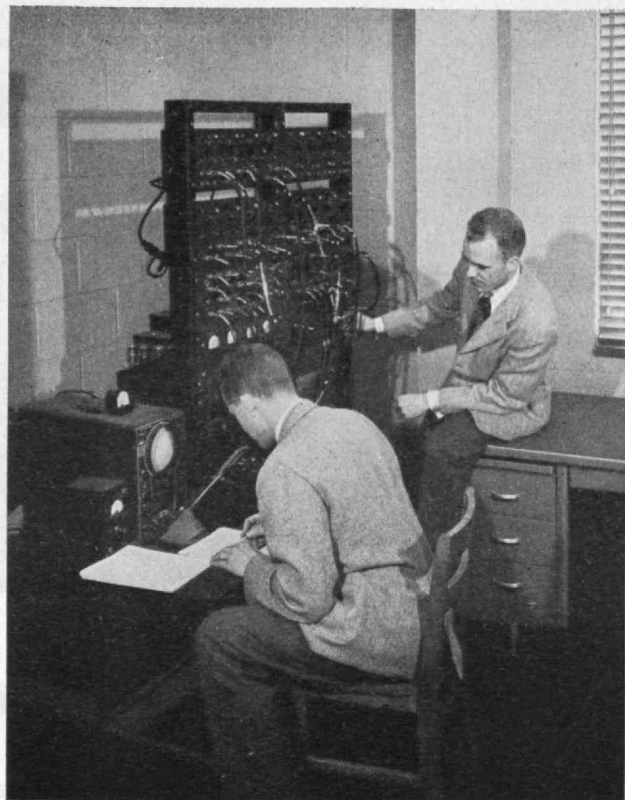
This lucite model of a spillway, which is set in a glass-walled flume, is used in teaching the flow of water over a dam. A hydraulic jump is formed at the toe of the dam.



Standing wave pattern caused by stream entering a channel contraction at velocity higher than wave velocity. Shock waves in supersonic gas flow produce analogous patterns.



The pilot model of the unsteady flow water tunnel with automatic pressure controls to produce accelerated motion through the pipe connecting the upper tank with lower receiver.



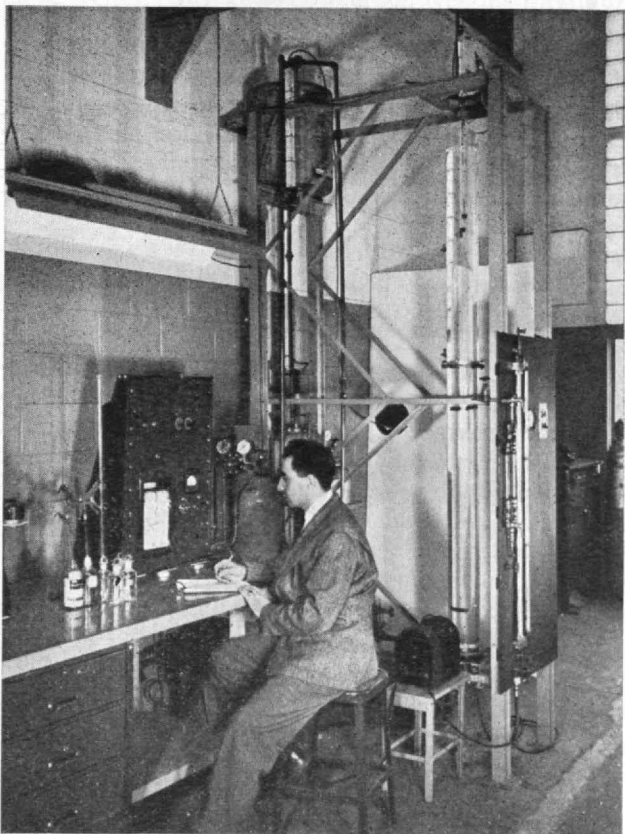
Transient pressure and flow phenomena in penstocks and surge chambers in hydropower plants are studied by means of electronic analog computers.

method, bentonite suspensions with polarized light, or electrical analogies are available for such studies of potential motion. Provisions will also be made for installations for resistance measurements in closed conduits of varying roughness with elbows, contracting sections, diffusers, and other objects of technical interest.

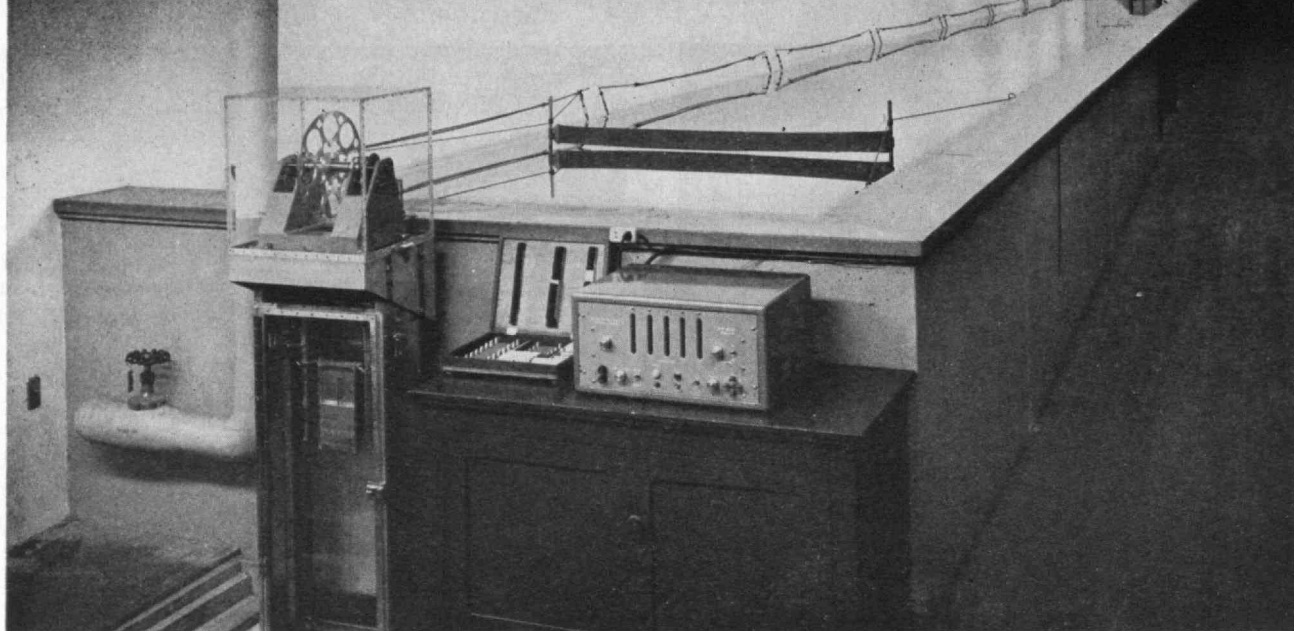
Thus the equipment in the demonstration laboratory is planned primarily to transmit to the student visually — and by systematic test — the most important aspects of the mechanics of liquid flow with particular reference to engineering problems. The experimental units in the main hall are devoted principally to the solution of specific research assignments, most of which are sponsored by governmental agencies at present. All problems are in the realm of fundamental investigations, rather than in that of special development for particular engineering problems. They are therefore well adapted to our aims of graduate training, and the staff on the sponsored projects is comprised primarily of graduate students. In addition, some of this equipment lends itself to investigations beyond the scope of the immediate assignment and is available for graduate thesis work for full-time students.

The Army Air Force has supported investigations on the analogy between the flow of water at velocities higher than the wave velocity for given depths, and the supersonic flow of air through conduits or past wing sections of airplanes. This work is done by means of a channel, more than 40 feet in length, with a glass bottom. The channel can be tilted up to 10 per cent

(Continued on page 429)



Equipment for conducting aeration experiments provides for the transfer of oxygen to deaerated water in the tall lucite column, through which air or oxygen is rising in small bubbles. A mercury drop electrode system with recorder gives a continuous indication of oxygen content of the water.



All M.I.T. photos

The Ship Model Towing Tank

*Precision Tests on Models As Long As Six Feet Can
Be Made in the Institute's Towing Tank*

By MARTIN A. ABKOWITZ

THE advent of the building of the new Ship Model Towing Tank at M.I.T. brought to realization a long-time desire of the Department of Naval Architecture and Marine Engineering for a research and instruction facility in the field of hydrodynamics of ship design. The towing tank is located in, and constitutes a part of, the new Hydrodynamics Laboratory and was constructed as a project of the M.I.T. Development Program.

Purpose of Ship Model Tests. Although a towing tank may be used for a variety of types of hydrodynamic research, its principal purpose, and therefore the basis of its design, is to make possible the prediction of the power requirements of the full-size ship from tests carried out on a geometrically similar model. A fairly accurate estimation of horsepower requirement of a ship design must be made very early in the planning stage in order that the necessary space and weight may be allocated for machinery and fuel. At present, the estimation of the power necessary to drive a ship of a given design at a certain speed can be obtained either from tests on a model or from published results of model or full-scale trial tests of ships with similar general characteristics. Properly performed, tests on models will yield much more accurate estimates. Ship-model tests are also extremely useful in comparing the relative performance and efficiency of several designs.

The Institute had a need, therefore, to construct a ship model towing tank of limited size such that the results of model tests conducted in the tank would be of sufficient precision to assure an accurate extrapolation of test data to the full size prototype.

Description of Towing Tank. The towing tank is 108 feet long, 8 feet 7 inches wide, and 4 feet deep. The water level in the tank may be set at any desired level up to 4 feet to simulate a prototype operating in shallow water. The four-foot water depth is used to simulate deep water operation of the full size ship. The size of the tank limits the length of the models which may be effectively used to a length of between four and six feet. The finer the shape of the ship, the larger is the length of model permitted. The limitation on model size is necessitated by wall and bottom effects which, for a given size of tank, become significant if the ship model which is to be tested is too large.

In order to observe and photograph the submerged portion of the model while in operation, a glass wall 30 feet long and running the full depth of the tank is located just beyond the mid-length of the tank where the model maintains a constant speed. The size and geometry of waves produced by a wave generator may be observed through the glass wall during the course of tests simulating rough water. In addition, the existence of this glass wall makes the towing tank suitable for air-water entry research.

The tank bottom is level in order to carry out shallow water conditions. Drainage is provided by sloping gutters along the side.

Threaded and plugged brass anchor pieces are embedded into the concrete bottom of the tank every seven and a half feet along the length and three feet on each side of the center line. These anchor pieces provide a ready means of securing auxiliary apparatus for special types of research, such as walls within the tank to simulate a ship operating in a canal.

Wave dissipators are installed along the walls on each side and at each end of the tank in order to destroy surface waves rapidly and to calm the water surface after each run of the model. The wave dissipators consist of long cylindrical metal tubes placed horizontally and partially submerged so that the upper portion of the circumference just penetrates through the water surface. They can be adjusted to any water level and can quickly be lowered to the bottom of the tank when testing ship models in waves.

Measuring the Towing Force. The dynamometer used to measure the resistance force and speed of the model uses falling weights to provide the towing force, and is therefore known as a "gravity type." This type of dynamometer was constructed to obtain the necessary precision in the measurements of force and speed of a small model. In addition, when towing the model in waves, the gravity-type dynamometer simulates the condition of essentially constant propeller thrust of the prototype, and for both model and prototype the speed in waves varies in an oscillatory fashion.

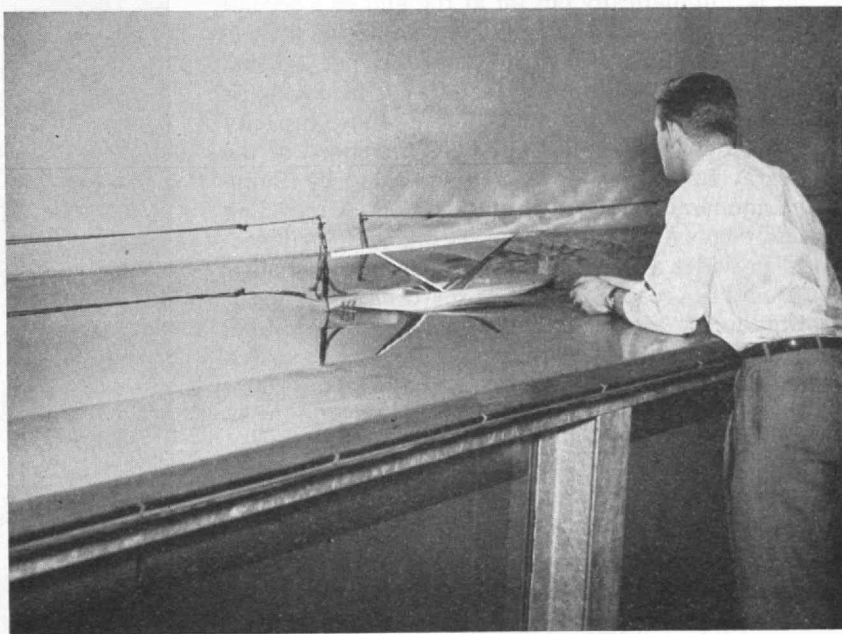
The precision of the instrumentation provides measurement of the towing force to within 10^{-4} pound, and measurement of the speed to 10^{-3} knot (one knot equals 1.689 feet per second). The accuracy of measurement of the speed and of the towing force is about one-tenth of one per cent. The sensitivity necessary in measuring the speed and resistance of the model may be inferred from the fact that a 500-foot ship of a certain design, moving at 18 knots, has 121,000 pounds resistance, while a five-foot model, simulating the prototype, requires a towing force of only 0.16 pound.

Two single-grooved pulleys, one mounted along the center line at each end of the tank, support a continuous cord under five pounds' tension. A towing bracket connects the ship model to the cord. The torque on the pulleys necessary to tow the model is provided by two weight pans connected to one of the pulleys by means of cords wound into a threaded groove on the shaft of the pulley. The two weight pans hang from the shaft diametrically opposite each other and are connected to each other by the cords wound around the pulley shaft. The unbalanced torque (and therefore the towing force) is provided by removing weights from one pan and placing them into the other pan. As the model travels along the tank, one weight pan moves vertically downward while the other rises. This method produces the desired torque without altering the load on the pulley. Since the load on the pulley bearings is essentially constant for all runs, the pulley friction is a function only of speed. The diameter of the pulley is 10 times that of the shaft so that the towing force is one-tenth the difference in weights on

the two pans minus a calibrated friction force which varies with speed, and the model travels 10 times the distance which the weight pans move. The friction of the entire towing assembly (that is, pulleys, cord, weight pans, and weights) is the order of 0.004 pound (at the tow line) and by calibration is readily determinable as a function of speed to within 0.0001 pound. Thus the instrumentation will measure towing forces to within 0.0001 pound. This sensitivity and accuracy were obtainable as a result of the precision machine work done by the M.I.T. Instrumentation Laboratory where the pulley assemblies were made.

Additional weights, called acceleration weights, are attached to one of the weight pans at the beginning of a run. After the model has traveled a certain distance along the tank, the acceleration weights enter mercury pools and are floated off the pan. From this point on, the towing weights remaining in the weight pan maintain the speed of the model. The height of the mercury pools can be adjusted to remove the acceleration weights after the model has traveled anywhere from zero to 60 feet along the tank. The purpose of the acceleration weights is to bring the model to the proper speed quickly so that most of the run will be at the desired constant speed. By gradually floating off the acceleration weights, shock and vibration in the towing cord are minimized.

The pulley assembly is mounted on a bronze shelf at the drive end of the tank where the weight pans are located. To this shelf is attached a dynamometer cabinet, which is accommodated in a well 3 feet in diameter and 12 feet long, which houses the mercury cups, weight pans, and acceleration weights throughout their travel. The whole assembly of pulley, shelf, and dynamometer cabinet ride vertically on machined rails and can be raised and lowered electrically. By means of this arrangement, the whole apparatus can be quickly lowered to accommodate any desired water level in the tank and still remain aligned and ready for immediate use after the height is set.



Model of merchant ship hull being towed (right to left) in the M.I.T. Towing Tank. Three 10-foot sections of the tank have glass walls which permit visual and photographic studies to be made. Portions of two glass panels are shown here.



Electronic speed indicator and dynamometer at the drive end of the tank. The drive pulley is atop the open dynamometer cabinet and circular well, opened to view. The electronic speed indicator is on the desk.

Measuring Speed by Electronics. By means of electronic instrumentation, the speed of the model is measured at an idler pulley mounted at the far end of the tank. The diameter of the pulley is such that one revolution per second is equivalent to a model speed of two knots. A black anodized sheet-aluminum disk mounted on the periphery of the idler pulley has 2,000 uniformly spaced radial slits, each of which is 0.008 inch wide and one quarter of an inch long. Thus, during a counting time of one second, each slit represents a speed of 0.001 knot. A light source (beamed through an optical system) and a phototube are mounted with the slotted disk between them, so that the phototube receives a light impulse every time a slit passes the center of the optical system. The output of the phototube is amplified and transmitted to an electronic counter located at the drive end of the tank. The electronic device counts the number of light impulses produced as the slits pass the phototube. The count is automatically cut off at the end of a second by means of a crystal time gate (accurate to 10^{-6} second). The number of pulses counted per second, which represents directly the speed in knots, is flashed on a five bank number board whose capacity is 100,000 counts per second. Thus the speed of the model, accurate to 0.001 knot, is indicated by illuminated numerals which can be recorded. A recycling circuit, displaying the speed every one and a half seconds, provides a visual method of observing whether the model has reached constant speed or is still accelerating during a run where constant speed is desired.

The electronic device is also equipped with a switch which throws out the time gate and allows the count to be started and stopped manually. The counting interval may be made equal to the time the model travels a known distance along the tank, and the count subsequently compared to the distance traveled by the model, thus checking the towing apparatus for slippage. The instrument can be easily checked at any time by a built-in 100,000 cycle testing circuit.

In order to obtain the necessary information from towing tests in waves, it is possible to attach an integrator circuit to the counter unit by means of which a continuous plotted record of speed of the model may

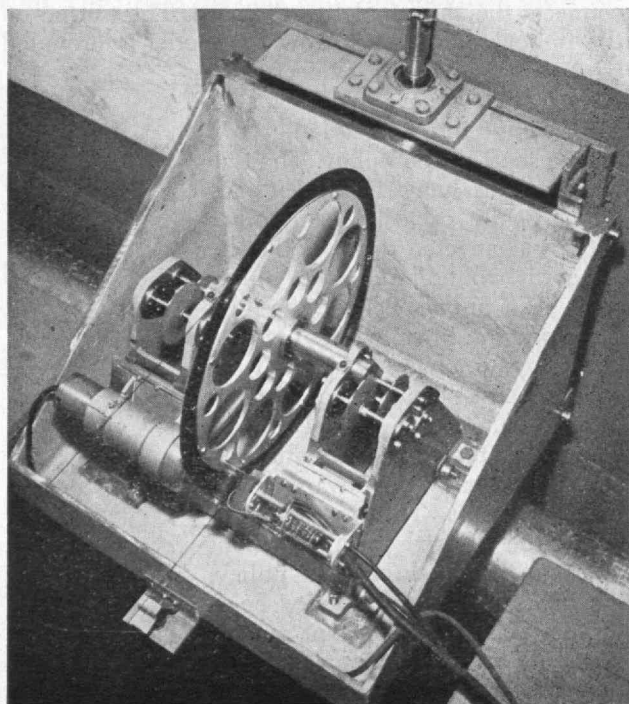
be obtained. The integrator unit will be added to the instrumentation in the near future.

The arrangement of the instrumentation is such that, if necessary, one person can conduct a model test from the drive end of the tank, according to the following procedure. The desired unbalance in the weight pans is made by removing a certain weight from one pan and placing it into the other pan. The mercury cups are then set at the proper distance. The model is then released by means of an electrical switch and the speed is observed on the electronic speed indicator. The towing force is recorded as one-tenth the difference of the weights on the pans minus the calibrated friction for the speed observed. As a result, the towing force or model resistance (known to 0.0001 pound) required to tow the model at a certain speed (accurate to 0.001 knot) is readily and effectively determined.

Future Plans. Plans for future instrumentation for the Ship Model Towing Tank call for a wave-generating device, a towing carriage, and an internal six-component dynamometer for stability studies. The tank will be used for student instruction and theses, for research and development work, and for commercial testing.

The Ship Model Towing Tank was set in operation on February 20, 1951, when the first tests were run by students as part of their instruction work in the subject "Dynamics of Ship Design." For the remainder of the term, the tank was in continual use for instruction and thesis projects.

The Department of Naval Architecture and Marine Engineering is very much pleased by the deep interest shown in the new Ship Model Towing Tank by the numerous visitors who have already had the opportunity to inspect this new research facility. An invitation to visit the tank is extended to Alumni and friends of M.I.T.



Idler pulley assembly showing the slotted disc and phototube (lower left-hand corner of cabinet) used for speed determinations.

The Role of the "Mariner"

Construction of a Merchant Fleet of Fast, New Vessels

Is Required for National Security and the

Safe Conduct of International Trade

By EDWARD L. COCHRANE

THE role as leader of the freedom-loving nations of the world has been thrust upon the United States and with it an awesome responsibility in the mounting conflict of ideologies. Whether the international future is one of a prolonged war of nerves throughout most of the world, or whether a global holocaust has been sparked by the hostilities in Korea, one plain and unalterable fact emerges crystal clear. The United States cannot ever again afford to hedge its responsibility of leadership because our very survival, and the survival of the countless millions of free peoples and those seeking freedom everywhere, depend upon how well we acquit ourselves.

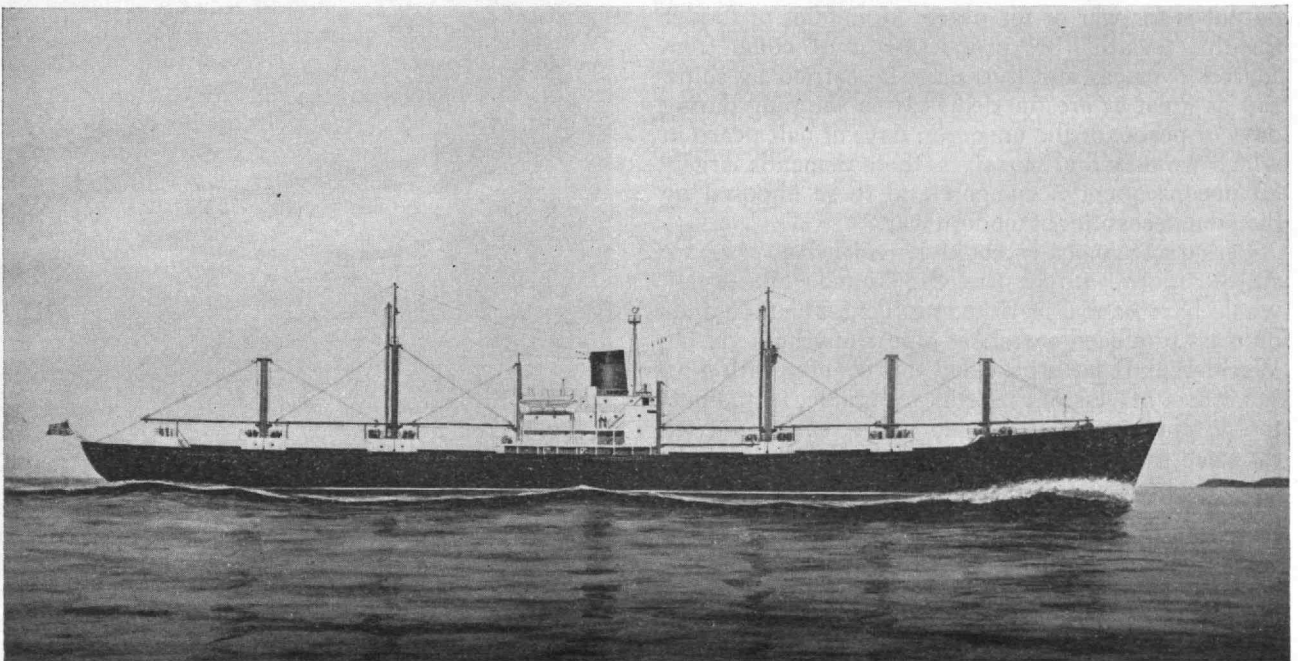
At first glance it appears somewhat out of place to preface a discussion of maritime matters with observations of this character. A closer scrutiny of the basic reasoning behind advocating an American merchant marine of the most modern and best designed ships in the world today, however, brings out for sober reflection the importance, and an ever-increasing importance, of merchant-type ships to our military security and economic well-being.

Any searching analysis of this situation most certainly results in a fundamental conclusion: numbers

alone are not enough where merchant sea power is concerned. It is not sufficient to have a given number of ships — whether that number be in the hundreds or the thousands — unless the vessels meet or surpass the exacting specifications imposed by the era of history which exploded upon mankind with the detonation of the first atomic bomb. This is not to say that the merchant marine, now and forever more, must gear its thinking and development solely along lines that its need, in the American scheme of things, is or will be strictly military or semimilitary.

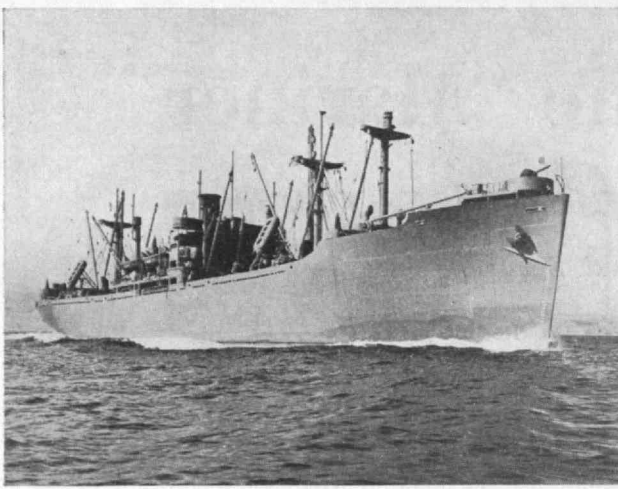
Perhaps never before in history has a greater measure of responsibility for the future fallen upon the maintenance of an American economy and industrial machine. Today our technological system is balanced on the sharp edge of uncertainty as to whether the world can live in peace or may suffer the devastation of an atomic war. In striving to help maintain this precarious balance, the maritime industry has been cast in a role as complex as the future itself.

The complexities revolve around the single point that almost every activity of the merchant marine must be approached with a dual objective of contributing to this nation's security as well as safe conduct of inter-



Maritime Administration Photograph

Artist's drawing of ship of the "Mariner" type, in peacetime garb. These ships will be 525 feet long with a dead weight of 12,500 tons.



U. S. Maritime Commission Photo

Ships of the Victory type, built during the latter days of World War II, are still carrying much sea-borne cargo over the Atlantic and Pacific.

national trade. In all its planning today the merchant marine must, of necessity, proceed with the assumption that an all-out global war could break out at any moment. To follow any other line of reasoning would be a foolhardy gamble against fate and the calculated cunning of the totalitarian forces which would destroy us. In short in this troubled period of international relations, the maritime industry must look to the future with the knowledge and understanding that it may be called upon at any time to provide a sea-lift military life line, or it may be required to continue in large measure its present assignment of bulwarking the economic and industrial defense of the United States, in particular, and of the free nations of the world who stand with us to block the expansion of communist aggression in general.

As vast and great as are the resources of the United States, the widely dispersed raw material reserves do not make this nation self-sufficient. The never-quenched appetite of the giant that is the American industrial machine must constantly be fed, whether its output is for war or for peace. Mountains of fodder for this leviathan of production must come from sources overseas and thus must be carried by ships. But as great as are the demands on shipping during days of peace, or the uncertain days of half peace in which we now find ourselves, these demands largely are inconsequential compared to those imposed by the vital necessities of modern war.

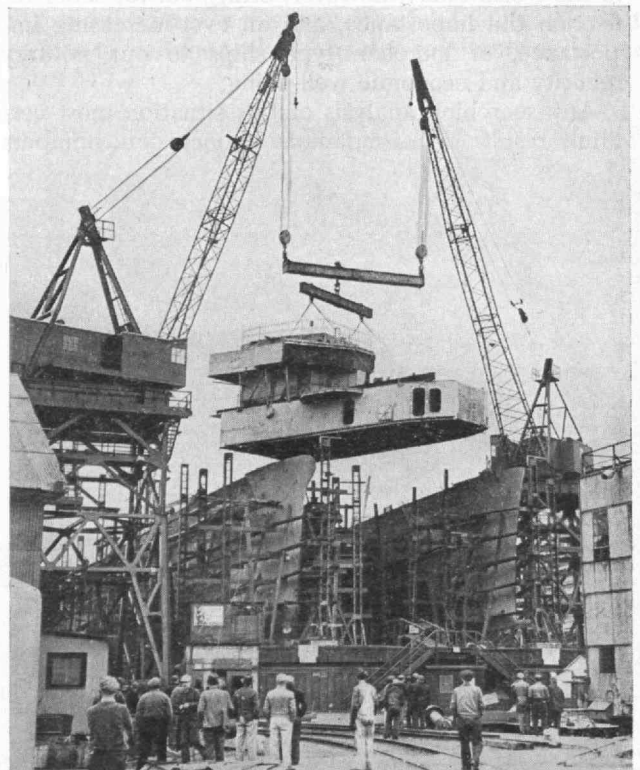
Perhaps it logically could be said that were we still in the pre-Atomic Era, the United States today would have no real maritime problem. The thousands of mass-produced merchant-type ships built during World War II have provided this country with a reserve fleet of vessels that still are usable. In the not-too-distant past, before the atom was transferred from the scientist's vocabulary to its present position in military weapons, perhaps that reserve fleet could fill our need for another five or 10 years.

But not today is the reserve fleet fully capable of meeting the nation's emergency shipping requirements. Even in these days of half peace, all of the speedier, more efficient Victory-type cargo vessels built in the latter days of World War II, have been removed from the laid-up category. The World War

II ships, with speeds of 14 and 17 knots, have been placed in service in the Korean lift to augment the merchant fleet carrying cargoes to bulwark the defenses of western Europe and free Asia. In addition to stripping our reserve anchorages of the entire backlog of Victory ships, we now are withdrawing each month sizable numbers of the sturdy, but markedly slow and outmoded, mass-produced Liberty ships which were so familiar to, and vital on, the sea lanes of the 1941-1945 global conflagration.

To meet the obvious and pressing need for additional shipping, the Maritime Administration has launched upon a shipbuilding program aimed to provide the type of sea transport this nation will require in any future world-wide outbreak of hostilities. A newly designed vessel of the "Mariner" class is to be built in sufficient numbers to assure at least the beginning of an adequate merchant-type fleet. Ships of the Mariner class will be designed specifically to meet definite requirements which a group of outstanding experts deem desirable, if not necessary. The fleet of Mariner vessels should provide an adequate role in the nation's peacetime economy and form the backbone of a trooper-cargo armada capable of carrying men and materials wherever the need might arise.

With a dead weight of 12,500 tons, the Mariner has a lift capacity superior to anything of its type we now have afloat, and its speed of 20 knots is double that of the Liberty ships. At present, 25 of these vessels are under construction in five different shipyards. The first of the Mariner class will take to the seas early in 1952. Another postwar ship of advanced design already has been launched by the Maritime Administration. It is a vessel of 10,500 dead-weight tons having a speed of



U. S. Steel Corporation

For standardized vessels, shipbuilding time can be reduced by one third by prefabrication methods in which entire sections, such as the deckhouse and bridge, are lifted into place as was done for this destroyer.

18.5 knots. This vessel is approximately the same size as that of the Liberty and Victory ships but has greater speed and incorporates other developments. This vessel, the S.S. *Schuyler Otis Bland*, is due for delivery early this summer. Experimental use of this vessel will determine its role in peacetime and war-time programs.

Objections have been voiced to the construction of new cargo ships while Victory ships are in wide-spread use, and our reserve fleet still contains the war-built Liberty ships. But these objections result largely from the belief held in some quarters that merely a large number of ships is sufficient to fulfill our maritime needs. Any well-rounded analysis of the situation will shatter this contention.

Consider the case of the Libertys and the Victorys, too, for that matter. It should be remembered that the newest of the Liberty ships is nearly eight years old and that it has been almost six years since a Victory was built. When first laid down for Britain in the spring of 1941, the *Empire Liberty* was a ship built to the particular emergency needs of one seafaring nation. At that time, hardly anyone would have predicted that the *Empire Liberty* would become the prototype of the largest single type of ship ever constructed.

Built in the North Sands yard of the J. L. Thompson Company, Ltd., at Sunderland, England, the *Empire Liberty* was a 9,500-ton tramp. At the time, she seemed just another ship, but destiny had marked a place in history for her regardless of her then old-fashioned reciprocating steam power plant. The *Empire Liberty* was delivered in November, 1941, at a time when the German submarine menace was whittling away at Britain's sea lift in a manner that posed a serious threat to that country's life line. Naval architects and other experts, called in by the Prime Minister to do whatever could be done to provide more ships in a hurry, were sent to the United States to seek out American shipyards which could build at least 60 merchant-type vessels a year for Britain.

In a matter of weeks, American builders had commenced work on the first of the Libertys. At about the same time, the United States found itself at war and in dire need of millions of tons of shipping. Suddenly the United States found itself producing Libertys by the hundreds. Through a combination of American prefabrication techniques and the basic simplicity of the original design, the Libertys were admirably suited for mass production. But the ship itself, which became the most familiar silhouette in the ocean convoys of World War II, achieved its niche in history largely through the pressure of the moment, instead of long-range planning.

The Victorys, which came along later in the conflict, were the result of planning and war-born developments. Like the Libertys, these vessels were the brain children of many persons. But notwithstanding their monumental achievements during World War II, and wide-

spread use today, the Liberty-Victory ships were creations which resulted largely from a situation already at hand; namely, the war against the Axis powers.

Since the birth of the Libertys and Victorys much has happened which rules them out of consideration for any future assignment as first-rank vessels in war-time. The inexorable progress of technological advancement and the press of economic developments have placed a mark against them as the type of ships called for in an American peacetime merchant fleet adequate for our future needs.

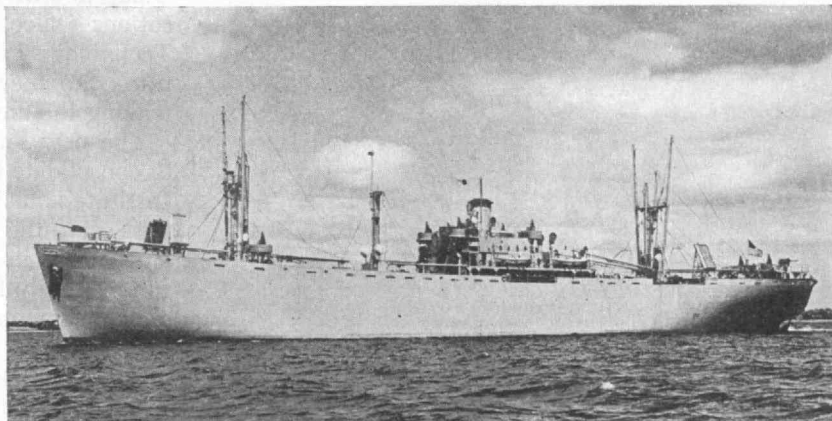
The Maritime Administration and defense officials are more concerned, at the moment, with new merchant-type ships because of the beclouded international outlook. Out of the Korean situation has grown the firm conviction that we must be ready, with fast dry-cargo vessels, to transport the military strength of this country to whatever danger area may develop.

As ominous and dark as the war clouds of the present may be, however, a large portion of the efforts of the American merchant marine must be channeled into enterprises not directly concerned with the military. The United States is bent on having peace and there still exists hope that another global war may be averted. To a major degree, whatever peace the world may enjoy must result from the willingness of the democratic nations of the world to make and keep themselves sufficiently strong to dissuade any potential aggressor from launching a full-scale attack on Western civilization and ideologies.

With this as an accepted premise, it must be held firmly in mind that it is not enough for the United States merely to ward off possible military attack. The American economy must also be marshaled in such a manner as to guarantee that our way of doing business does not falter or fail. Should the American economic system collapse, Communism would certainly be advanced as the only alternative for millions of people everywhere, and the cause of freedom would be perhaps forever lost.

To bulwark the American industrial machine with raw materials transported from sources overseas, and to provide our friends abroad with United States products — be it food or manufactured goods — are tasks only merchant ships can perform adequately. In time of peace, as history has so often shown, America must

(Continued on page 422)



Maritime Administration Photograph
Produced in large quantities early in World War II, Liberty ships of the type shown here will ultimately be replaced by the faster "Mariner" type of ships.

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Secretary of M.I.T.

APPPOINTMENT of Walter H. Gale, '29, Associate Professor of Aeronautical Engineering, as Secretary of the Institute was announced on May 1 by James R. Killian, Jr., '26, President of M.I.T. As secretary of the Institute, a new administrative post, Professor Gale will have executive responsibilities for the Institute's broad program of external relations and development of resources.

In addition, he will serve to facilitate the work of the officers, members, and committees of the M.I.T. Corporation, working particularly with the departmental Visiting Committees of the Corporation and with the projected new Standing Committee on Development. Professor Gale will also be responsible for planning and co-ordinating more extensive alumni organization for the recruitment and counseling of prospective students, with the collaboration of the director of admissions.

In line with the general duties of his office, Professor Gale will have administrative direction of the following offices and programs: the Development Office which is to be established on a permanent basis;



M.I.T. Photo

Walter H. Gale, '29
Secretary of the Institute

the organization and extension of the Institute's system of alumni counselors for prospective students; the Industrial Liaison Office, established in 1949 to make available to industry on a co-operative basis the vast research facilities of the Institute; the News Service; the newly created Publications Office whose purpose is outlined on this page; and the Summer Session, which in recent years has been expanded to offer courses to industrial research workers and science teachers, as well as to the M.I.T. student body.

Professor Gale, son of the late Permelia N. Pettigrew of Short Hills, N.J., and Oliver M. Gale, advertising executive and author, was born in Ventura, Calif., on July 18, 1906. After attending the Choate School in Wallingford, Conn., and graduating from Lane Technical High School in Chicago, Professor Gale entered M.I.T. He received the degrees of bachelor of science in 1929 and master of science in 1930. Until 1935 Professor Gale was research assistant in M.I.T.'s Aeronautical Engineering Department; served the following year as project engineer at the Bendix Aviation Corporation; and from 1936 to 1942 as sales representative for the M. B. Skinner Company. As a lieutenant commander in the United States Naval Reserve, Professor Gale served in the Bureau of Aeronautics from 1942 to 1945, where he was project supervisor of the Experiments and Developments Branch, and head of the Structural Modification Section, Structures Branch.

Since 1946 he has been associate professor of aeronautical engineering, budget officer and deputy executive officer of the Department of Aeronautical Engineering, and director of the Summer Session at the Institute.

Publications Office Formed

SINCE 1945 director of publications of the Carnegie Institution of Washington, Frederick G. Fassett, Jr. has been appointed director of the Publications Office at M.I.T. "In addition to heading the Publications Office, Mr. Fassett is to be director of the Technology Press, and will have charge of the Institute's Summer Session," President Killian stated in making the announcement.

The new Publications Office has been established to consolidate the planning and preparation of all the Institute's official publications, and to insure that they best serve the educational objectives of the Institute and reflect its high standards. The office will have responsibility for the Institute's catalogue, its official announcements, and other documents and printing.

As director of the Technology Press, Mr. Fassett will have responsibility for the growing number of scholarly publications issued under the imprint of the Institute. As director of the Summer Session, he succeeds Walter H. Gale, '29, Associate Professor of

Aeronautical Engineering, who has just been appointed secretary of the Institute. Mr. Fassett will continue the development of the Institute's summer program, extending its scope and its service to industry and education.

Having joined the staff of the Department of English and History as an instructor in 1930, Mr. Fassett is already thoroughly familiar with M.I.T. He became an assistant professor in 1934, and associate professor in 1938. From 1934 to 1938 he was chairman of first-year instruction in his Department and served as a member of the committees on revision of the curriculum, first-year instruction, and admissions.

From November, 1938, until he left the Institute to take his post with the Carnegie Institution of Washington in 1945, Mr. Fassett was editor of *The Review*. For his distinguished service to M.I.T. Alumni during the seven years when he was *The Review's* editor, Mr. Fassett was made an honorary member of the Alumni Association in 1945.



Frederick G. Fassett, Jr.
Director, M.I.T. Publications Office

Bachrach

Born in Portland, Maine, in 1901, he is the son of the late Frederick G. Fassett, editorial writer for the *Boston Transcript*. He was educated in the public schools of Portland and Waterville, and Co-burn Classical Institute of Waterville. He then entered Colby College, from which he holds the degrees of bachelor and master of arts. He is also a graduate of the University of Maine, which awarded him the degree of master of arts in 1930. In 1931-1932 he carried on graduate studies at Harvard University. His major fields of research have been American literary history, logic and analysis, and rhetoric. He is the author of *A History of Newspapers in the District of Maine from 1785 to 1820*; *Practical Writing*, and *Studies in Reading*, both

in collaboration with Paul C. Eaton, '27, formerly Assistant Professor of English in the M.I.T. Department of English and History. He has written numerous newspaper and magazine articles, as well as considerable verse.

We Elect

VOTES cast by Technology Alumni this spring in the annual democratic process of selecting new officers for the Alumni Association resulted in the election of Alfred T. Glassett, '20, as president of the Association for the year beginning July 1, 1951. Hugh S. Ferguson, '23, was brought into office as vice-president for a two-year term. Royal Barry Wills, '18, and George W. McCreery, '19, were elected to two-year terms on the Executive Committee.

Nominated by the Alumni, to serve for five years as term members of the M.I.T. Corporation are: John A. Lunn, '17; Howard H. McClintic, Jr., '19; and David A. Shepard, '26.

For election to membership on the National Nominating Committee, 3,678 valid ballots were cast, and the following candidates were declared elected: George E. Colby, '32, for District 3; George P. Edmonds, '26, for District 6; and Harold E. Koch, '22, for District 7. All will take office on July 1 for a term of three years.

Classes whose numerals end in two or seven chose members to represent their class on the Alumni Council. Elected to serve for five-year terms are: Charles E. Fuller, '92; John P. Ilsley, '97; Frederick H. Hunter, '02; George A. Crane, '07; John M. Pettingell, '12; Frederick Bernard, '17; A. Robert Tonon, '22; Dwight C. Arnold, '27; Thomas E. Sears, Jr., '32; Philip H. Peters, '37; Louis Rosenblum, '42; and James L. Phillips, '47.

It is gratifying to note that the number of Alumni taking part in balloting has steadily increased since the end of World War II.

Student Government Aided

A GRANT of \$10,000 from the Vannevar Bush Trust to aid students in the development of qualities of leadership and resourcefulness has been announced at the Institute. While the grant was made without restriction, the trustees suggested that \$500 be awarded annually from the income and principal of the fund to the undergraduate head of student government to defray expenses incident to his office.

In making the suggestion, Oscar S. Cox, '27, a trustee of the Vannevar Bush Trust, said:

A special grant to the elected head of the student government should assist him to discharge his duties more effectively and at the same time should serve as an incentive for the entire student body to interest itself in government and human relationships and to develop the qualities necessary for that purpose. The trustees were led to this suggestion by the conviction that one of the best ways to further scientific progress is to develop qualities of leadership and resourcefulness, not only as applied to scientific problems, but also as applied to the complex fields of government and human relationships.

The first award from the grant will be made to Robert M. Briber of Denver, Col., newly elected President of the Class of 1952, who will apply the funds for the organization of a leadership conference for members of the Institute Committee.

The Vannevar Bush Trust was established by Vannevar Bush, '16, President of the Carnegie Institution of Washington, from the entire proceeds of his book, *Modern Arms and Free Men*. Dr. Bush has served the Institute in many capacities until called to his present position.

Class Reunions

The Review is happy to reprint below information on class reunions which appeared in the April issue, and also lists additional data received since the publication of the April Review.

- 1891 June 9. Dinner at 1:00 P.M. at The Country Club, Brookline, Mass.; Harry H. Young, reunion chairman, J. L. Hammett Company, 290 Main Street, Cambridge 42.
- 1896 June 8 and 9. New Ocean House, Swampscott, Mass. Dr. John A. Rockwell, reunion chairman, 24 Garden Street, Cambridge 38.
- 1900 June 12-14. The Pines, Cotuit, Mass. Elbert G. Allen, secretary, 11 Richfield Road, West Newton 65.
- 1901 50th reunion. June 8, participation in commencement activities; June 9 and 10, Oyster Harbors Club, Osterville, Mass.; June 11, special class table at Alumni Day luncheon in Du Pont Court. Philip W. Moore, reunion chairman, 1031 Fishers Lane, Hubbard Woods, Ill.
- 1905 June 15-17. East Bay Lodge, Osterville, Mass.
- 1906 June 12-14. Snow Inn, Harwichport, Mass. James W. Kidder, reunion chairman, 215 Crosby Street, Arlington 74, Mass.
- 1911 June 8-10, returning to Cambridge for Alumni Day, June 11. Snow Inn, Harwichport, Mass. Alexander W. Yereance, reunion chairman, 80 Federal Street, Room 704, Boston 10.
- 1916 June 8-10. Coonamessett Inn, North Falmouth (Cape Cod), Mass. Class get-together at Copley Plaza on June 11 in afternoon. Ralph A. Fletcher, reunion chairman, P.O. Box 71, West Chelmsford, Mass.

- 1921 June 8-10. Sheldon House, Pine Orchard, Conn. Class get-together at Copley Plaza on June 11 in the afternoon. Irving D. Jakobson, reunion chairman, Jakobson Shipyard, Inc., West End Avenue, Oyster Bay, Long Island, N.Y.
- 1926 25th reunion. June 9 and 10. Hotel Griswold, New London, Conn., returning to Cambridge for Alumni Day, June 11. Alfred H. Dolben, reunion chairman, 17 Bond Street, Reading, Mass.
- 1931 June 9 and 10. Mattapoisett, Manor, Mattapoisett, Mass. August L. Hesselschwerdt, Jr., reunion chairman, 28 Hillcrest Road, East Milton.
- 1936 June 9 and 10. Weekapaug Inn, Westerly, R.I. Fletcher P. Thornton, Jr., reunion chairman, W. E. Green Corporation, Woolworth Building, New York 7, N.Y.
- 1941 June 9 and 10. Hotel Curtis, Lenox, Mass. D. Reid Weedon, Jr., reunion chairman, 4 Overlook Way, Winchester, Mass.
- 1946-2 June 9 and 10. Everett Moore Baker House, M.I.T. All members of Class of 1946 invited. Theodore P. Heuchling, reunion chairman, Servomechanisms Laboratory, Building 32, M.I.T., Cambridge 39.
- 1946-6 Donald A. Hurter, reunion chairman, 108 Vernon Street, Norwood, Mass. See listing above for Class of 1946-2 for date and place.

Alumni who may be planning to attend reunions this year are urged to consult their class secretary or reunion chairman for later details or more complete information not included in this tabulation.

Council Meets New Dean

TRENDS in architectural education and progress in jet propulsion took the spotlight at the 282d meeting of the Alumni Council held in the Campus Room of the M.I.T. Graduate House on April 30. In the absence of John A. Lunn, '17, President of the Alumni Association, who was unavoidably out of town, Horatio L. Bond, '23, presided.

During the business portion of the meeting, Donald P. Severance, '38, Alumni Secretary, reported for the Executive Committee that the treasurer's budget for the fiscal year 1951-1952 had been examined and approved, and that the treasurer had been authorized to subsidize Alumni Day expenses, up to \$800, with funds from the Reunion Reserve Fund. Also reported were changes in the class affiliation for four Alumni, and the fact that between March 26 and April 24, nine Faculty and Council members had visited 13 clubs. It was also voted to recognize the newly established M.I.T. Club of Puerto Rico which had its organization meeting on March 31 when H. E. Lobdell, '17, Executive Vice-president of the Alumni Association, visited San Juan.

As general chairman of Alumni Day, 1951, Allen Latham, Jr., '30, reported on plans for the reunion

to be held in Cambridge on Monday, June 11. By the time this issue of The Review is distributed, programs will already have been put in the mail.

Mr. Bond next introduced Karl T. Compton, chairman of the M.I.T. Corporation, who discussed the origin of the Ford Foundation and its current activities. He spoke of the Foundation's approach to determining the areas of work it would support and explained briefly the manner in which the Foundation expects to operate in about five areas.

Dr. Compton then presented Pietro Belluschi, new Dean of the M.I.T. School of Architecture and Planning. Dean Belluschi spoke on his concept of the changes which have taken place in the role of the architect during the past 25 years and the consequent new role of architectural education. He stressed that architecture in this age is more for the average person, not just for a selected few.

Mr. Bond then introduced Professor Edward S. Taylor, '24, of the Department of Aeronautical Engineering, who spoke on jet propulsion. He discussed briefly the history of the development of jet civil transportation and military use of jet propulsion. He also predicted the probable effects of increased use of jet propulsion, and forecast that the indirect benefits in this field would far exceed the more obvious ones.

Along the Main Stream

PROMOTIONS on the Faculty of the Institute, recently announced, include six members who are advanced to full professorships and 18 to associate professorships. Promotions and new appointments to assistant professorships number 27. These advancements will become effective on July 1.

Members promoted to the rank of full professor are: Herman P. Meissner, '29, Department of Chemical Engineering; Isadore Amdur, Department of Chemistry; Charles H. Norris, '31, Department of Civil and Sanitary Engineering; Charles P. Kindleberger, Department of Economics and Social Science; William H. Radford, '32, Department of Electrical Engineering; and Francis Bitter, Department of Physics. Photographs of this distinguished group are shown below in alphabetical sequence in counter-clockwise order.

Assistant professors promoted to the rank of associate professor are: H. Guyford Stever, Department of Aeronautical Engineering; Major Lyman R. Blake, Department of Air Science and Tactics; Lockhart B. Rogers, Department of Chemistry; Lloyd Rodwin, Department of City and Regional Planning; E. Cary Brown, Department of Economics and Social Science; Donald P. Campbell, '43, and Robert M. Fano, '41, both of the Department of Electrical Engineering; Klaus Liepmann, Department of English and History; Patrick M. Hurley, '40, Department of Geology; George W. Whitehead, Department of Mathematics;

Stephen H. Crandall, 2-46, and Prescott A. Smith, '35, both of the Department of Mechanical Engineering; Amos J. Shaler, '40, Department of Metallurgy; Thomas F. Malone, 2-46, Department of Meteorology; Major Augustine M. Fragala,

Lieutenant Colonel Samuel L. Hall, and Lieutenant Colonel Finis G. Johnson, all of the Department of Military Science and Tactics; and William W. Buechner, '35, Department of Physics.

Those to become assistant professors are: Elmer E. Larrabee, '48, Department of Aeronautical Engineering; Robert B. Newman, '49, School of Architecture; Herman C. Fischer, '50, and Werner H. Gumpertz, '48, both of the Department of Building Engineering and Construction; John H. Kempster, '47, and Leo B. Moore, '37, both of the Department of Business and Engineering Administration; Raymond F. Baddour, '49, James C. Bresee, and Jacob M. Geist, all of the Department of Chemical Engineering; David Shoemaker, Department of Chemistry; Harl P. Aldrich, Jr., '47, John S. Archer, '48, and Henry M. Paynter, 10-44, all of the Department of Civil and Sanitary Engineering; John R. Coleman, Department of Economics and Social Science; Jordan J. Baruch, '47, Elery F. Buckley, '49, James M. Ham, '47, F. Ralph Kotter, Osman K. Mawardi, Ronald E. Scott, '50, and Albert B. Van Rennes, 10-44, all of the Department of Electrical Engineering; W. H. Sterg O'Dell and Gregory Tucker, both of the Department of English and History; Fredman J. Walcott, Jr., 2-44, Department of Mechanical Engineering; Morris Halle, Department of Modern Languages; and William L. Kraushaar and Karl U. Ingard, '50, both of the Department of Physics.

A newly appointed visiting professor in the Department of Naval Architecture and Marine Engineering is Laurens Troost of Delft Technical College.

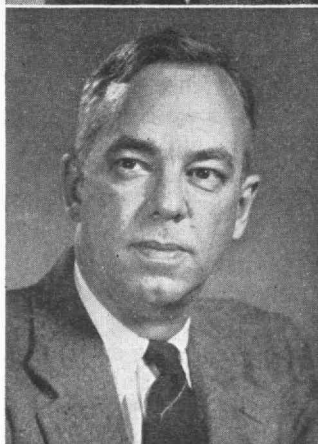
Twenty-two members of the staff have been advanced to the rank of instructor in seven of the Institute's Departments in the Schools of Engineering, Science, Humanities and Social Studies.



◀ I. Amdur



W. H. Radford, '32 ▶



F. Bitter



C. P. Kindleberger



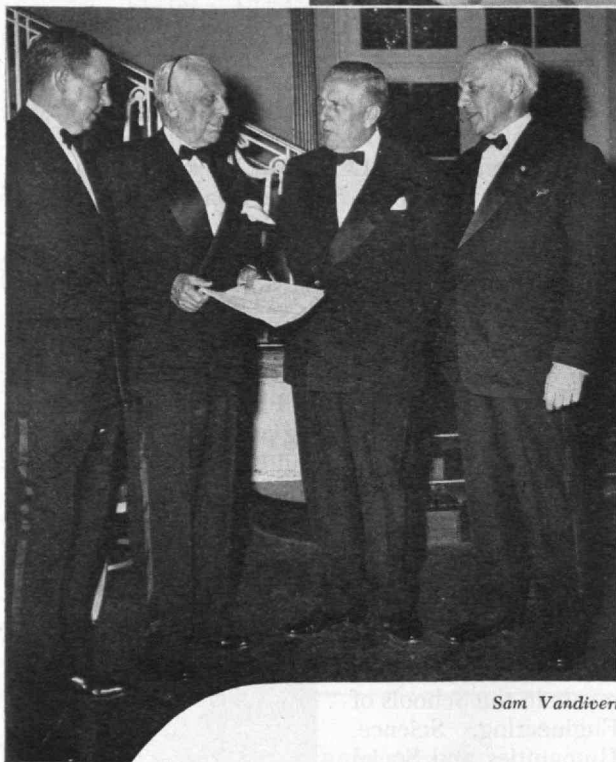
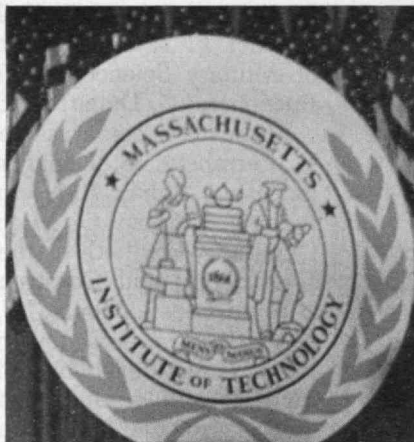
H. P. Meissner, '29



C. H. Norris, '31

M.I.T. Photos

At the victory dinner honoring Alfred P. Sloan, Jr., '95, and members of the Committee on Financing Development at the Waldorf-Astoria Hotel on May 3, M.I.T. President Killian presented to Mr. Sloan a volume of 2,000 signatures in testimony of his leadership in American industry and education. Below (left to right) are shown the principal speakers: President Killian, Mr. Sloan, Paul G. Hoffman, and Karl T. Compton.



Sam Vandivert



Development Program Victory Dinner

MORE than 1,000 leading industrialists, educators, and distinguished representatives of the professions gathered at the Waldorf-Astoria Hotel in New York on Thursday evening, May 3, at a victory dinner in honor of Alfred P. Sloan, Jr., '95, chairman of the Board of General Motors Corporation. The dinner marked the successful completion of the \$20,000,000 Development Program launched by the Institute's Committee on Financing Development in November, 1948, with Mr. Sloan as honorary chairman. By January, 1951, a total of \$20,100,000 had been contributed and pledged to this program, not including a special gift of \$5,250,000 from the Alfred P. Sloan Foundation for the establishment of a new School of Industrial Management now being organized.

Mr. Sloan addressed the group on the importance of fundamental knowledge and outlined his views for providing "an opportunity for the young men of today better to prepare themselves to meet the exacting demands of industrial management as they become industrial executives of tomorrow." It is planned to

publish his address in a forthcoming issue of *The Review*. Other speakers included: Paul G. Hoffman, President and Director of the Ford Foundation; Karl T. Compton, chairman of the M.I.T. Corporation; and President Killian. Edward Pennell Brooks, '17, who will take over the duties of dean of the School of Industrial Management in September was introduced, and also spoke briefly. Marshall B. Dalton, '15, who served as general chairman of the Committee on Financing Development, presided.

Speaking in tribute of Mr. Sloan's contributions to American industry and education, President Killian found opportunity to comment on the current need for adequately supporting institutions of higher learning. With special reference to the recently concluded Development Fund, President Killian found encouragement in the "convincing demonstration of the willingness of public-spirited individuals and corporations to provide adequate support to our privately endowed and privately controlled educational institutions." Dr. Killian observed that were this nation forced to give up academic freedom and if our institutions should lose their independence, one of the foundation stones of our free enterprise system would be lost. "The M.I.T. Development Program," stated President Killian, "has served to stimulate and to establish a new and fruitful relationship between education and industry. It has demonstrated that industry feels that it has a stake in educational free enterprise, and that the future strength of our industrial system is in part dependent upon the men and the ideas which flow out of the educational institutions."

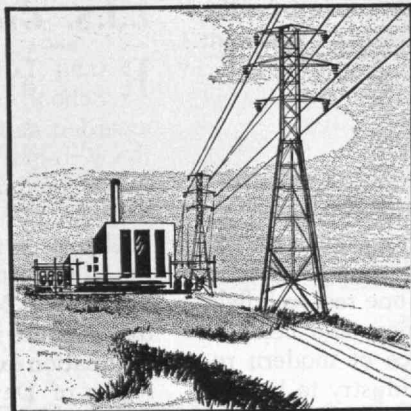
As a token of appreciation of Mr. Sloan's leadership, President Killian presented to Mr. Sloan a testimonial
(Continued on page 416)

BUSINESS IN MOTION

To our Colleagues in American Business ...

Like other suppliers, Revere offers its metals in a wide variety of alloys. This is for the reason that no one metal or alloy is suitable for every purpose, for every requirement. In order to help solve the sometimes complex problems that arise concerning metal specification, fabrication, and use, Revere offers the services of its Technical Advisory Staff. Here is an example of its work.

When an electric utility was re-tubing a condenser, Revere Research had an opportunity to obtain samples of the tubes that were removed. A laboratory examination showed them to be made of an excellent alloy; let us call it "Alloy X," since the tubes were made by a competitor. This alloy is usually specified for conditions of erosion-corrosion, but our examination indicated that the tubes also were subject to severe attack by air entrainment and high-velocity, turbulent water. The Revere Technical Advisor, who inspected the condenser in person, suggested that longer tube life might be obtained if cupro-nickel in the 10% nickel alloy were used. As a test, 50 such tubes were installed alongside the new "Alloy X" tubes.



At the end of only three months, the utility was disturbed to find that some of the "Alloy X" tubes were beginning to fail. Samples were sent to Revere Research, which once again reported that these competitive tubes were good ones, mechanically and as to alloy. The Revere Technical Advisor immediately returned to the utility, where he spent two days and nights on the job, much of the time inside the condenser itself. He found the cupro-

nickel tubes in fine condition. Recommendations included putting a perforated iron sheet in the water box to reduce turbulence and air entrainment, and the use of 10% cupro-nickel tubes throughout. These suggestions were followed.

Two years later the cupro-nickel tubes were inspected, and found to be in excellent condition. As a result, a new generating station of the company was equipped with them.

Please note our statement that the tubes made by a competitor were all right as tubes. If Revere Tubes in the same alloy had been installed there, the same trouble would have been experienced. It was natural enough for the utility to blame the tubes, but Revere knows that if condenser tubes do not give long and economical service the fault most probably lies in the selection of an alloy unsuitable for operating conditions. In many cases, as in this one, Revere has been able to suggest changes in alloy or in operation, or both, bringing about important economies for users of condensers.

What Revere does in this way is not unique by any means. Suppliers in every industry do as much for their prospects and customers, every day in the week. They do it gladly, because a happy, satisfied customer is a precious asset. So we suggest that no matter what your business is, no matter what you buy, nor from whom, you take your suppliers into the closest possible confidence, permitting them to learn all they can about the conditions their materials have to meet. This will cost you nothing, and may save you much.

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volume signed by all members of the M.I.T. Corporation and Faculty, members of the Alumni Council, and guests at the dinner, among whom were many members of the National Development Committee. The volume contained approximately 2,000 signatures.

In his address, Mr. Hoffman called for unity of purpose and action, not alone within the borders of the United States but with all people intent on "waging peace." He warned that the United States might face disaster if it failed to maintain unity with western Europe against the threat of Communist aggression. He expressed the beliefs that: "an enduring peace built on freedom and justice can be won if the free people of the world will dedicate themselves unreservedly to the task; and peace can be won only if the free people everywhere lock arms so tightly in the common cause that no force can tear them apart." Mr. Hoffman stated: "A new kind of leadership is called for." He believes that "unless we consecrate ourselves as wholly to winning the peace as we have from time to time consecrated ourselves to military victory, the prospects are dim indeed. Peace has to be worked at, not dreamed about and left to someone else."

Industrial Liaison Office

MORE and more large industries are beginning to realize that their leadership tomorrow must stem from an awareness and understanding of the new scientific knowledge and techniques of today. For any one industry the fact applies not to one research field alone, but, increasingly, to all sciences and fields of engineering. Yet the scale and pace of modern research are such as often to cause industry to lag behind, by many months or even years, in its knowledge of current research progress.

To assist in this industrial problem, during the past three years the Institute has evolved its Industrial Liaison Program, constituting a mutually helpful arrangement with a large and representative group of the nation's leading industrial corporations. In return for essentially unrestricted financial support, the Institute undertakes to establish with these companies the closest possible relationship which can be of authentic benefit to both the Institute and industry.

Under this program the Institute also benefits, and in several ways. New and convenient methods are opened up for Faculty members to enlarge their service to industry. Contact with industry provides live and worth-while topics for thesis work so that students derive stimulation through contact with "live" problems. The program also provides increased opportunities for effective placement of graduates through better mutual knowledge of situations and personnel involved. Finally, such co-operation provides a climate more favorable to increased industrial support of specific projects.

Every effort is made to individualize the Institute's relationship with each company participating in the

program. Among the regular services which the Institute renders may be included the holding of industrial conferences of informal nature in research fields of common interest and usually at a high professional level. Industrial representatives are encouraged to visit the Institute for brief informal contacts with individual Faculty members. The primary purpose of such visits is to acquaint industrial personnel with the "state of the art" in the many fields represented with special competence by the M.I.T. Faculty. Representatives from industry are welcomed by the Institute to work on particular projects for specified periods of time for the purpose of learning new research techniques in fields where Institute facilities and space are available for the purpose. Finally, every effort is made to provide companies with reports of activities at M.I.T. in which the companies may have an interest.

The operation of this program is the responsibility of the Industrial Liaison Office, under the direction of Robert V. Bartz, 2-44. Associated with Mr. Bartz in the Industrial Liaison Office are: Rowland S. Bevans, 2-46, William R. Weems, '35, David I. Sinizer, '51, and Walter L. Allison, '51. Warren K. Lewis, '05, Professor Emeritus of Chemical Engineering, has been associated with the office as consultant.

L.I.S. Graduation

RALPH LOWELL, trustee of the Lowell Institute School and member of the M.I.T. Corporation, awarded certificates to approximately 80 students at the 47th graduation exercises of the Lowell Institute School held in Huntington Hall on Thursday evening, May 24.

Greetings from President Killian and members of the M.I.T. Corporation were conveyed by Thomas K. Sherwood, '24, Dean of Engineering, who spoke for the Institute in his first appearance at Lowell School graduation exercises. William C. White, Dean and Director of Day Colleges at Northeastern University, and widely known in the field of engineering education, gave the principal address to the graduates. Arthur L. Townsend, '13, Director of the Lowell Institute School, presided at the exercises.

Sir Roderic Hill Visits M.I.T.

IN the conduct of an educational program, the promotion of international relations looms large. The program of student study in Sweden last summer, already recorded in *The Review* (February, 1951), and the Foreign Student Summer Project which has operated for several years, are prime examples of opportunities afforded students in one country to learn how students in other countries live. So, too, are the crew races on the Charles, during which Cambridge University took the lead over Harvard, Boston University, and M.I.T. in April.

But students are not the only ones to have such advantages. Sir Roderic Hill, Rector of the Imperial College of Science and Technology in London, has come to M.I.T. to spend a portion of his vacation while Professor Joseph H. Keenan, '22, of the Department of Mechanical Engineering, is at present studying at the

(Continued on page 418)



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electricity. What this means in terms of production can be better realized when you consider that the average industrial worker in the United States has at his disposal about eight horsepower to help him do his job.

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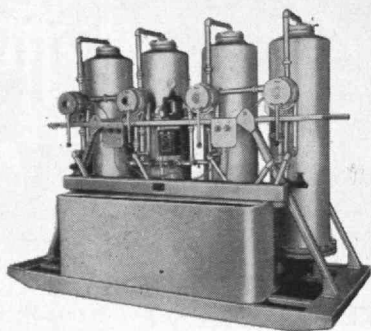
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THE INSTITUTE GAZETTE

(Continued from page 416)

Imperial College. Sir Roderic has come to Cambridge to meet President Killian and members of the Faculty with whom he has had correspondence, and also to make new acquaintances. During his trip he will also visit other educational institutions in the United States.

A most enjoyable feature of Sir Roderic's visit was the dinner he gave for members of the Faculty Council in behalf of the Governors of the Imperial College of Science and Technology, at the Club of Odd Volumes on April 11. Speaking of the common objectives of the London and Cambridge institutions, Sir Roderic commented on the role of technologists in the following words:

The Twentieth Century is the heyday of the scientist and the engineer. More and more of our young people will receive their professional education in some scientific or technological field. Let us not regret this. Let us not apologise for it. Rather let us rejoice. . . .

Be that as it may, if a liberal education is given with a sense of the dignity of science and engineering, it can be no less useful to man in achieving serenity and happiness in guiding his own destiny than its practical consequences have for his material well-being. It requires that science, a knowledge of nature and oneself, should be an essential ingredient, an equal partner in any education for a civilized man.

Whether we regard this training as turning men into scientists, engineers — and in your case also architects — or whether we look upon it as a process of turning scientists and engineers into men, we both have a great mission to fulfill. An understanding, such as I trust will ripen as the years go by between our two institutions, will help to focus and conserve what is precious in the great field of education in which we work.

From Industry to Classroom

FOURTEEN young industrial executives, winners in a nationwide competition, have been awarded Alfred P. Sloan Fellowships for Executive Development. These provide an intensive one-year program at M.I.T. for study of management policies and economic and social problems of industrial administration. These men, who have been nominated by their employers as showing unusual promise for industrial leadership, will receive fellowships up to \$3,700. They will be on leave from their companies and upon completion. (Concluded on page 420)



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INVENTIVE Americans are often hamstrung today. Not because of any lack of ideas, but because of a need for large and expensive facilities to find out if and how their ideas work.

This was no obstacle in our earlier days. With nothing but his own hands and a few dollars, Henry Ford proved that he could build an automobile that ran. Eli Whitney built his cotton gin in a barnyard with homemade tools—and it worked.

In contrast, the first pair of nylon stockings took ten years of research time and \$70,000,000.

Today, science and invention have become so complex that a man with an idea for a better product often needs the assistance of an army of specialists and millions worth of equipment to prove his idea has commercial value.

Within the petroleum field, The Sinclair Plan now offers to provide that assistance.

The Sinclair Plan

Under this Plan, Sinclair is opening up its great research laboratories at Harvey, Illinois, to independent inventors who have sufficiently good ideas for better petroleum products.

Sinclair Research Laboratories have nine modern buildings equipped to handle every phase of petroleum research. These laboratories were built with an eye to the future, and their potential capacity is larger than is required for current work. This capacity will be made available for developing the best ideas of outside inventors.

If you have an idea for a better petroleum product or for a new application of a petroleum product, you are invited to submit it to the Sinclair Research Laboratories, with the provision that each idea must first be protected, in your own in-

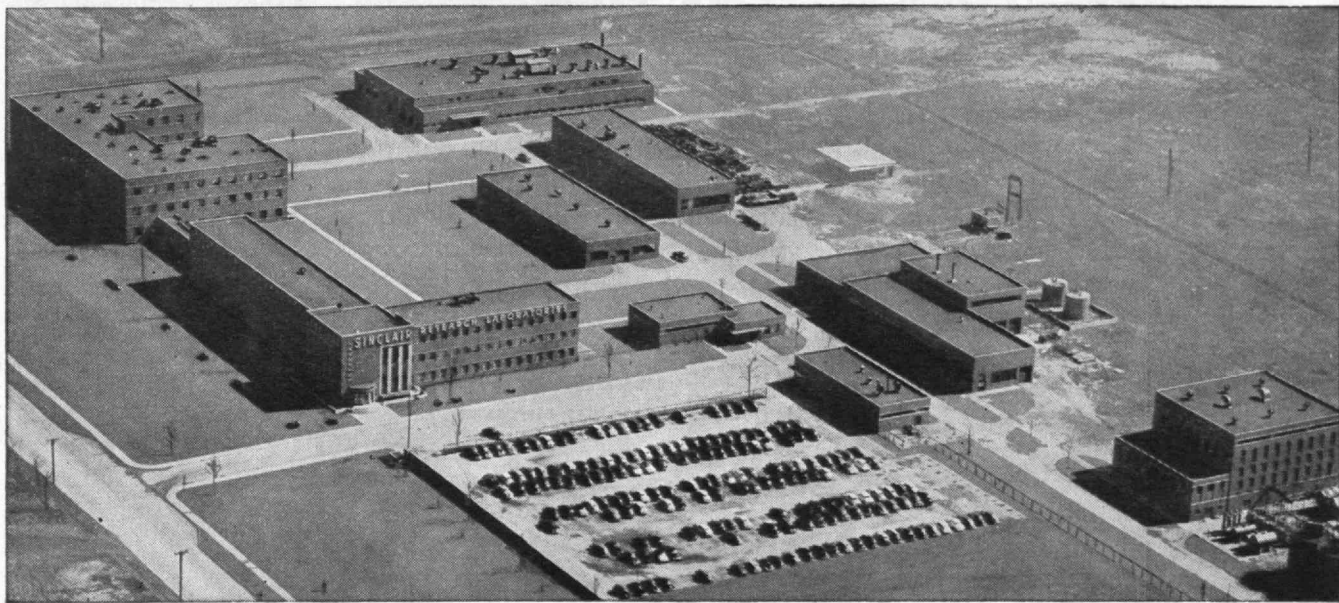
terest, by a patent application, or a patent.

If the directors of the laboratories select your idea for development, they will make, in most cases, a very simple deal with you: In return for the laboratories' investment of time, facilities, money and personnel, Sinclair will receive the privilege of using the idea free from royalties. This in no way hinders the inventor from selling his idea to other companies or from making any kind of arrangements he wishes without further reference to Sinclair.

How to Participate

Instructions on how and where to submit ideas under The Sinclair Plan are contained in an Inventor's Booklet that is available on request. Write to: Executive Vice-President, Sinclair Research Laboratories, Inc., 630 Fifth Avenue, New York 20, N. Y. for your copy of this booklet. *Important:* Please do not send in any ideas until you have sent for and received the instructions.

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pletion of the program will return to the same companies. In announcing the winners of the fellowships, Gerald B. Tallman, Associate Professor of Marketing, who is director of the Sloan Program, said:

This program provides an unusual opportunity for men of marked ability to study and evaluate business and economic problems with a mature viewpoint engendered by 10 years or more of practical business experience. The advantages of building some part of a man's formal education upon a background of practical experience is widely recognized, but the demand for continuity in business service and the financial burden of growing families thwarts this dream for most men. The farsighted co-operation of the Alfred P. Sloan Foundation and of employing companies, however, makes this program possible for a limited group of men selected on the basis of having shown unusual promise for leadership in business and their community.

During the period of study, the men will discuss problems of business management, of industrial and human relations in industry, and of the responsibilities of industry in regard to national and international problems. Through the study of business problems the men will seek to gain a better appreciation of the varying objectives and points of view of different elements in society, in industrial relations, financial management, marketing, production, and accounting.

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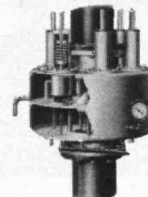
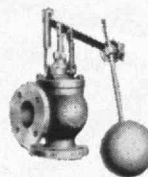
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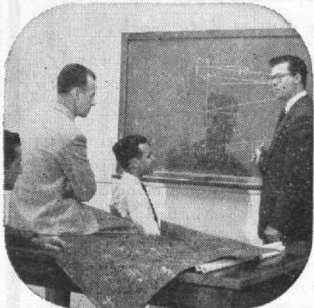
There's a better future—and a better life—waiting for engineers in Southern California—at Lockheed Aircraft Corporation. For here, in beautiful, sun-swept San Fernando Valley, you find living and working conditions beyond compare.

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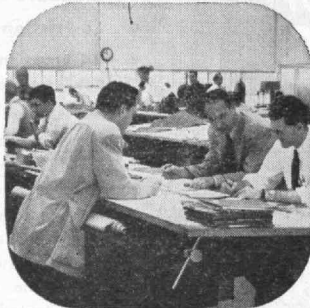
Lockheed engineers work in modern, air-conditioned offices. They are well-paid—and vigorous, original thinking is encouraged. Training programs prepare engineers who show special promise for advancement. Aeronautical training or experience is not required; Lockheed trains engineers in all fields for aeronautical work.

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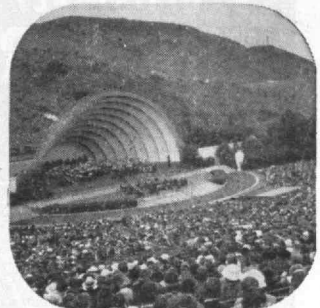
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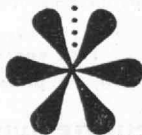
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ROLE OF THE "MARINER"

(Continued from page 409)

import mountains of raw materials and must have export markets for finished goods if the U.S. economy is to expand in a healthy manner. In time of war, the same foreign lands that provide resources and markets become our life-or-death allies; they, as well as we, depend on the sea lanes (and thus ships) for the vital transportation connecting link that spells out the difference between victory or defeat.

It thus becomes apparent that the United States must have an adequate merchant fleet at all times. The safety and well-being of our national security, in war and peace, demand that the merchant marine be a dual-purpose fleet composed of the best possible ships. Is it not then wise and sound to plan and work toward that goal? It is the belief of the Maritime Administration that the Mariner program is a step in that direction.

The beginning of the end of the wartime effectiveness of the Liberty-Victory class of merchantmen came with the development of such electronic arms as guided missiles; with improved models of target-seeking torpedoes that can be fired accurately from great distances; with the threat of atomic bombing of targets, such as a convoy of ships would provide. Such developments amply fortify the belief that the best way to run ships under wartime conditions today is to run them independently, without convoy. In this way any targets available to enemy attack — whether

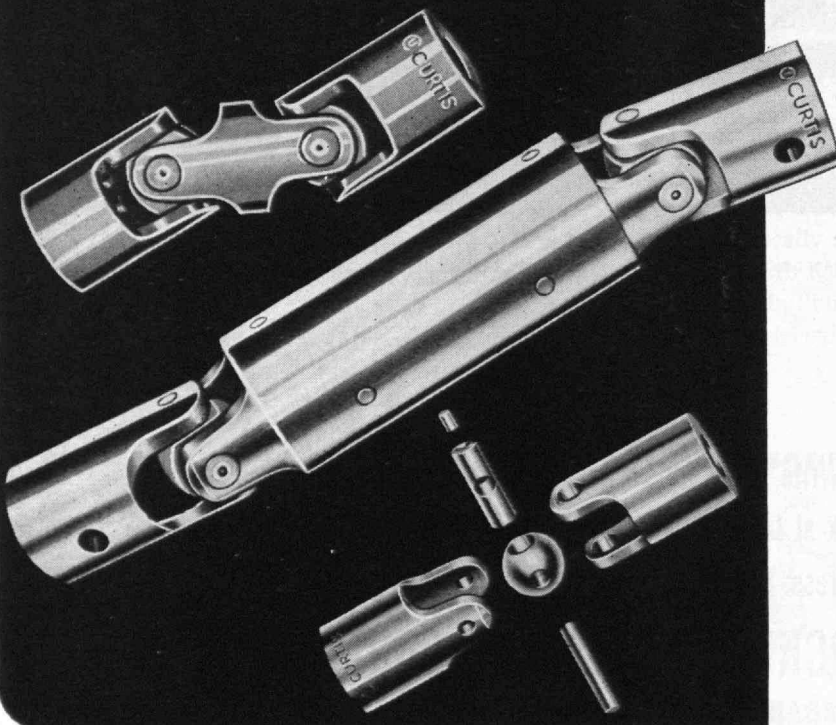
from aircraft, guided missiles, A-bombs, or naval craft — are made as uninviting and small as possible. All this is not to say that the Mariner class of ships is the perfect solution to the threats of modern warfare against shipping. Nor is it to say that the new class of vessels will be the ultimate in speedy, efficient bottoms for commercial needs. Instead, it is felt that the Mariner class represents a cross section of maritime thinking. Certainly the construction program for the Mariners represents affirmative action on the part of the United States Government to provide this country with the nucleus of a merchant-type fleet before a full-fledged emergency arises.

If the introduction of the Mariner vessels proves anything, it points up the need for still further advancement in the science of naval architecture and in shipbuilding. Surely in the foreseeable future, atomic power will be adapted to things other than bombs. Even now the United States Navy is at work on an atomic-powered submarine and it follows that when undersea craft can utilize this massive source of energy, the day will not be far distant when such power can propel our merchant ships as well.

This article has discussed at length the need for new shipping as an auxiliary to the military. The need also exists to provide improved vessels for strictly commercial use. Objections to the Mariner class ships for the peacetime merchant fleet have been voiced on the grounds that the vessels are too large for economical and efficient operation; that their speed is not

(Continued on page 424)

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REPORT FOR THE YEAR 1950

For the second calendar year since the war, new loans made exceeded repayments on outstanding notes, these totals for 1950 being \$149,562 and \$67,987, respectively. By December 30, 1950, 2,279 men — nearly three-quarters of the 3,144 receiving loans since the Fund was established in 1930 — had completely discharged their financial indebtedness to it.

The data given below summarize the Fund's transactions during 1950 together with cumulative figures for the past nineteen years.

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Cambridge
March 1, 1951

CUMULATIVE RECORD OF THE TECHNOLOGY LOAN FUND TO DECEMBER 30, 1950

	At Dec. 30 1950	At Dec. 30 1949	Net changes during 1950
ITEMS OF OUTGO:			
Number of men Receiving Loans	3,144	2,935	up 209
Total Amount Loaned	\$2,253,879	\$2,104,317	up \$149,562
Average Per Capita Loan	\$ 717	\$ 717	
ITEMS OF INCOME:			
Number of Men Whose Indebtedness has been Completely Discharged	2,279	2,185	up 94
Principal Repayments in Advance	\$ 601,914	\$ 582,565	up \$ 19,349
Other Principal Repayments	\$1,176,223	\$1,127,585	up \$ 67,987
	<u>\$1,778,137</u>	<u>\$1,710,150</u>	<u>up \$ 48,638</u>
Total Principal Matured, Considering "Advance Repayments" as Matured, when Paid	\$1,810,287	\$1,743,299	up \$ 66,988
Collection Ratio, i.e. Percentage of Total Maturities Paid	98.2	98.1	up 0.1
Matured Principal in Arrears	\$ 23,390	\$ 24,581	down \$ 1,191
Actual "Written Off" Accounts	\$ 8,760	\$ 8,569	up \$ 191
Total Maturities Unpaid	\$ 32,150	\$ 33,150	down \$ 1,000
Percentage "Written Off" to Total Loans	0.38	0.4	down 0.02
Percentage Matured Loans in Arrears plus amount "Written Off" to Total Loans	1.43	1.58	down 0.15
Interest Received	\$ 231,855	\$ 227,573	up \$ 4,282
Times Interest Received to Matured Loans in Arrears plus Amount "Written Off"	7.2	6.9	up 0.3
NOTES OUTSTANDING	\$ 466,982	\$ 385,598	up \$ 81,384



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ROLE OF THE "MARINER"

(Continued from page 422)

needed on global trade routes. Similar arguments were advanced when Robert Fulton first put steam to work on water; when the S.S. *Savannah* made the first Atlantic crossing; when the United States built the first of the C-type vessels shortly before World War II. If the maritime industry is to keep pace with the advances in other fields of transportation, however, it must constantly seek out ways of doing its job more quickly and efficiently.

Just what would constitute a completely ideal merchant ship around which the United States should plan and build its dual-purpose fleet is a question the satisfactory answer to which requires the best available brains. Since the American merchant marine, in effect, is a partnership of private shipping, the government, the military (and don't forget the taxpayer), the future must be the concern of virtually everyone. It almost goes without saying that too few people understand the importance of maritime matters to the over-all future of the free world in general and the United States in particular. Ships are the arteries which carry the lifeblood of trade over all the oceans, and we can no more do without them than we can do without our highways and railroads.

As for the nation's dependence on the merchant marine as an arm of its defense, we need only consider the record in World War II, when merchant ships were called on to carry 7,000,000 men, 203,000,000 tons of dry cargo, and 64,000,000 tons of petroleum products from the United States across the world's oceans. Merchant ships were converted for use as naval auxiliaries — as troop carriers, hospital ships, warship and airplane tenders, airplane and tank carriers, and repair

(Continued on page 426)

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(Continued from page 424)

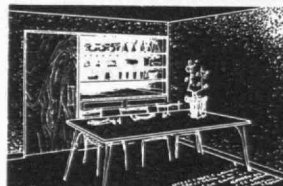
vessels. Some took part in the actual fighting. Their own guns, manned by naval gun crews or sometimes by the civilian crews, fought off enemy aircraft and submarines.

In the early days of our country, the merchant marine was important not only to the growth of a great trading nation but also to its very survival in many critical wars. The fast and maneuverable vessels built by the early American colonists gave them an advantage in opening new avenues of trade and in combating the enemies of the young nation. Merchant privateers were the mainstay of American sea power during the American Revolution, capturing British ships, weapons, and supplies, and damaging British trade. The Navy itself was improvised out of merchant ships and fishing schooners taken over by the government and manned by merchant marine officers like John Paul Jones and John Barry.

After the Civil War, however, the merchant fleet did not receive the support required to enable it to meet its obligations to the national defense. As the country's interest turned to continental development and expansion, shipping was neglected and rapidly deteriorated. In the Spanish-American War, the Army and Navy had to buy foreign shipping. For the most part, transport demands of World War I had to be met by British and French vessels, for the United States had dropped to fifth rank among maritime nations, and its fleet was old and slow. The emergency ship-building program instituted in 1917 succeeded in glutting the postwar market with hurriedly built vessels.

In spite of this costly experience, many of the same mistakes were made before World War II. Fortunately, needed reforms were instituted with the passage of the Merchant Marine Act in 1936, which provided for the payment of construction and operating-differential subsidies to builders and operators of American-flag vessels. The act also provided that every vessel built with the aid of government subsidies must be suitable for use as a naval auxiliary and must be so approved by the secretary of the Navy. Furthermore, features incorporated in new vessels for purely national defense purposes were to be paid for by the government in addition to subsidies.

The Merchant Marine Act, 1936, gave us a head start on the building of some modern cargo vessels
(Concluded on page 428)



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ROLE OF THE "MARINER"

(Concluded from page 426)

and tankers which were immediately available for war service. To meet the tremendously increased shipping demands of full-scale war, we made a prodigious shipbuilding effort, which resulted in the production of 5,500 vessels in four years. We paid a high price for them in man power, materials, and dollars.

Our job now is to see that the merchant marine is not a weak link in our economy and defense. The accomplishment of this aim requires an active interest in the problems of shipping and an active attempt to solve those problems. There is room in the maritime industry for men of vision who can pass along, to the nation as a whole, the need of a strong, efficient, and expanding merchant marine; the need of such a fleet is imperative to the welfare of America and all who desire to live in freedom from fear, want, and oppression.

Most definitely the future of America's shipping does not lie in having one type of ship any more than it lies in manufacturing any one type of a given product, or raising any single agricultural commodity. Instead, the nation needs a well-rounded merchant marine — a fleet of large, speedy, and comfortable passenger ships; a fleet of efficient and fast tankers; a fleet of dry-cargo vessels which surpasses anything else on the sea lanes. In short, the United States requires and should have the finest, not necessarily the largest, merchant marine the world has ever known. To accept anything less is to hedge on our responsibility of world leadership of the countries which believe in the freedom of mankind.



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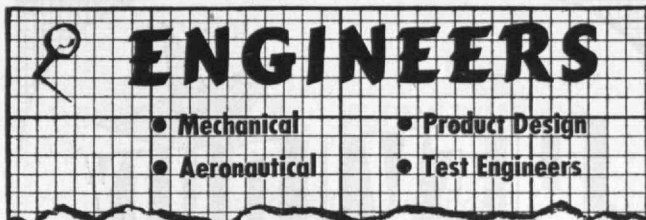
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(Continued from page 403)

with great precision, and by means of an adjustable nozzle a uniform stream of water can be produced of any desired depth and velocity within the capacity of the pumps. A large range of the Mach number characteristic of supersonic flow may thus be simulated. Obviously this channel is also extremely useful for the study of such high velocity flow of water which has no counterpart in aerodynamics, but is of interest only to the hydraulic engineer. It has been extremely helpful in the demonstration of such phenomena and is a prime example of the intimate correlation possible between our research activities and educational aims.

This reciprocity between teaching and research is also evident in the facility devoted to a detailed study of the characteristics of water waves. These depend on the depth of water and on the mode of generation. Solitary or single waves, whose wave length is large compared to the depth, were the first object of our studies, which are supported by the Office of Naval Research, and it is hoped that we may continue to the other end of the spectrum, so to speak, formed by the oscillatory waves of small wave length compared to the water depth. A lucite flume, permitting observations anywhere along its length through the bottom or its sides, has proved a useful tool for these studies. In addition to the measurement of wave shape and wave velocity, internal motions made visible by

(Continued on page 430)



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NEW HYDRODYNAMICS LABORATORY

(Continued from page 429)

the stroboscopic observation of discrete suspended particles are explored systematically. Wave action on erodible beaches and on solid structures will provide further problems of interest to hydraulic engineers.

In recent years the Office of Naval Research has also given its support to the development at M.I.T. of a novel test stand for the study of fluid resistance under transient flow conditions. A pilot model of an "unsteady flow water tunnel" has been erected which consists essentially of two reservoirs connected by a short tube or test section. Water is forced from the upper tank through the test section into the lower tank while pressures are controlled to produce the desired accelerated motion. This facility in its present size serves primarily for the solution of the many instrumentation problems connected with the instantaneous measurement of pressures and velocities and with the control of the accelerated water flow. However, to a limited degree experiments on resistance and cavitation inception will be possible which cannot be carried out with the normal water tunnel, in which a steady circulation is maintained as in the customary wind tunnels. The tunnel in question is somewhat analogous to the supersonic tunnels of the blow-down type in aerodynamics, except that two fluids are involved. For immersed bodies, however, a much larger unit will be needed. It is anticipated that the required unit can be built upon the successful development of the present program.

The United States Public Health Service is the sponsoring agency of an extensive program which deals with the experimental definition of the basic factors entering into the aeration processes in the course of sewage treatment. In sewage plants, air is bubbled continuously through the liquid to supply the oxygen needed for the biological decomposition and also to promote the steady mixing of the treated liquid. The oxygen transfer related to air-bubble size and concentration is studied in an aeration column, in which the oxygen concentration of the water may be raised from the lowest limit to saturation under accurate control. Experiments with pure oxygen have also been made. The aeration characteristics have been recorded with the aid of a specially developed oxygen recording system which indicates the temporal values of the dissolved oxygen over the entire test period.

(Continued on page 432)



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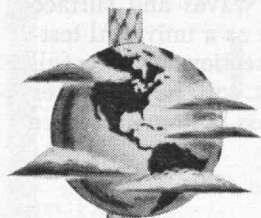
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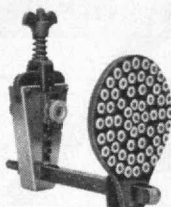
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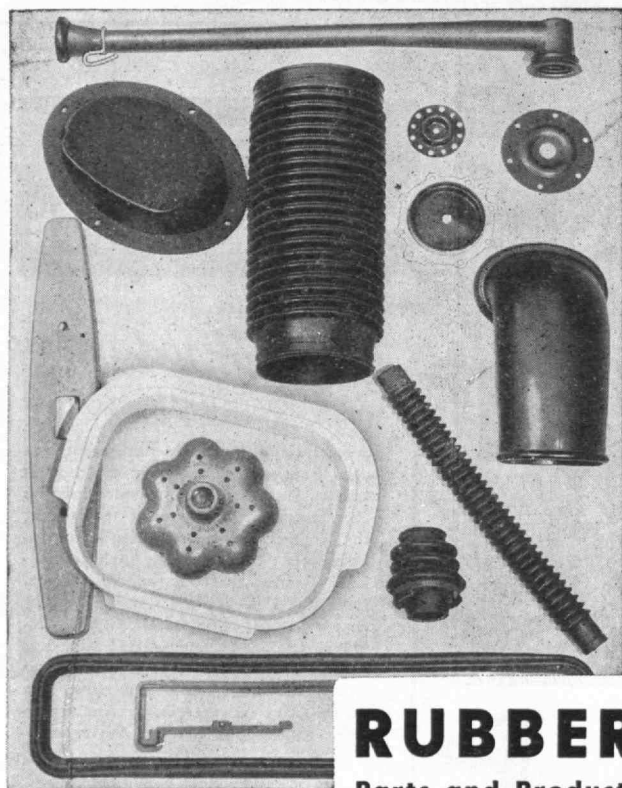
(Continued from page 430)

Also of general interest are two basic studies dealing with the measurement of the degree of turbulence in open-channel flow and with the inception of sediment motion along a stream bed. Some success has been achieved in combining a Pitot tube with a pressure cell for the determination of turbulent velocity fluctuations in water, and a series of experiments has been made to probe into the variations of the statistical properties of the turbulence existing in streams in various states of motion. Closely connected to the turbulence problems are the mechanics of sediment transport; some attempts at experimental correlation are under way and some promising observations have been obtained at the beginning stages of the movement of sediment along the bed of a stream.

It is evident that in practically all research problems instrumentation and measuring techniques assume a key role, and the development of new methods, or the adaptation of older ones, becomes a necessary phase of all experimental programs. Amongst its staff of graduate research assistants and associates, the Hydrodynamics Laboratory therefore has electrical and chemical engineers in addition to the mechanical and civil engineers interested in experimental hydrodynamics and hydraulic engineering.

Future Plans for M.I.T.'s Hydrodynamics Laboratory. Future facilities for research include, primarily, a long glass-walled flume extending along the south wall of the main hall which can be used for open-channel flow, for model work on spillways and stilling basins, and for research on waves and surface resistance. The flume is projected as a universal testing utility planned to be used in sections or in its full length of more than 100 feet. It will be 30 inches wide and 36 inches deep with glass bottom and sides over most of its length.

(Concluded on page 434)



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NEW HYDRODYNAMICS LABORATORY

(Concluded from page 432)

Hydraulic models of harbors, estuaries, and river sections are to be accommodated also on the main floor and in the basement area. In recent years space was not available at M.I.T. to accommodate such work, which will be stressed anew since the new laboratory affords an excellent opportunity to apply and test basic knowledge in the solution of many engineering problems, and in turn stimulates the pursuit of fundamental work.

Modern technology brings ever new problems to the fore also in hydrodynamics, and technical personnel trained to cope with them is wanted in fields only remotely suggestive of applications in this field. Many complex problems in the paper industry, in textile manufacturing plants, in mining and ore-dressing, and in the chemical industry have come to our attention.

It is our hope that the new Hydrodynamics Laboratory at M.I.T. will take its place of service to industry and public agencies in line with the Institute's well-established tradition, and that it will grow organically into a position which national and regional needs impose with respect to staff, students, and facilities.

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Alumni AND Officers IN THE News

In the Bookstalls

ARTHUR F. TAGGART'13 presents ore dressing facts necessary for "engineering thinking" in his book, *Elements of Ore Dressing*, published in January, 1951, by John Wiley and Sons, Inc.

FRANK R. CREEDON'18 relates "NPA's Role in Defense" through the pages of *Chemical and Engineering News* issued May 7, 1951.

JOHN W. W. SULLIVAN'23 tells *The Story of Metals* in his 290-page, illustrated book published by the American Society for Metals and Iowa State College Press.

BURNHAM KELLEY'41 is the author of *The Prefabrication of Houses*, published jointly in April, 1951, by John Wiley and Sons, Inc., and the Technology Press.

Of This and That

The Society of Chemical Industry presented its Perkin Medal to HENRY HOWARD'89 on April 27 in recognition of his important and distinguished services to the American chemical industry extending over a period of more than 40 years.

EARL P. STEVENSON'19 addressed the Boston section of the American Institute of Chemical Engineers on April 18 during a symposium concerning the engineer in management; THOMAS K. SHERWOOD'24 delivered the keynote address, discussing the role of the educational institution in preparing engineers for management; and CHARLES A. STOKES'40 was the moderator of the panel discussion.

JOHN E. BURCHARD'23 delivered an address on April 20 entitled, "The Individual, the Teacher and the Curriculum," during the University of Minnesota's centennial celebration. Dean Burchard also delivered the opening address entitled, "Humanity—Our Client," at the national convention of the American Institute of Architects held in Chicago May 8 through May 11.

Announcement was made on April 20 of the organization of a special committee within the Office of Defense Mobilization to advise President Truman and Mobilization Director Charles E. Wilson in matters relating to scientific research and defense. Among the 11 scientists named to serve on the science advisory committee are WILLIAM WEBSTER'23, CHARLES A. THOMAS'24 and JAMES R. KILLIAN, Jr., '26.

The June, 1951, issue of *Coronet* includes an interesting article entitled, "This Expert Knows Next Month's Weather," by Alfred Steinberg. The expert to whom it refers is JEROME NAMIAS'41 of the United States Weather Bureau.

With Victory Comes Honor

The following distinguished Alumni and guests were seated at the head table during the Victory Dinner given by the M.I.T. Corporation on May 3 in honor of ALFRED P. SLOAN, Jr., '95 and members of the Development Fund Committee. The dinner was held at the Waldorf-Astoria in New York.

First Row: REV. PAUL AUSTIN WOLFE, BERNARD M. BARUCH, E. P. BROOKS'17, LOUIS S. CATES'02, FRANK A. HOWARD'96, LEWIS W. DOUGLAS'17, STANLEY S. KRESGE, JAMES R. KILLIAN, Jr., '26, ALFRED P. SLOAN, Jr., '95, MARSHALL B. DALTON'15, PAUL G. HOFFMAN, KARL T. COMPTON, ERLE V. DAVELER, LAMMOT DU PONT'01, JOHN T. DORRANCE, JR., GERARD SWOPE'95, THOMAS D'ARCY BROPHY'16.

Second Row: B. E. HUTCHINSON'09, ALFRED L. LOOMIS, RAYMOND P. SLOAN, W. S. CARPENTER, Jr., T. C. DESMOND'09, JAMES MCGOWAN, Jr., '08, JOHN L. PRATT, ROBERT T. HASLAM'11, HENRY C. ALEXANDER, HORACE S. FORD, ARNOLD J. ZURCHER, ROBERT F. LOEB, DONALD F. CARPENTER'22, RALPH LOWELL, GEORGE A. SLOAN, OLIVER WILLITS, JOHN R. MACOMBER'97, REDFIELD PROCTOR'02, HARRY E. WARD, JAMES M. BARKER'07.

Third Row: G. PETER GRANT, Jr., '35, L. H. G. BOUSCAREN'04, J. J. DESMOND, Jr., THOMAS D. CABOT, WALTER H. GALE'29, JOHN A. LUNN'17, PAUL RYAN'22, PHILLIPS KETCHUM, DUNCAN R. LINSLEY'22, A. C. MARTS, WALTER HUMPHREYS, FRANCIS J. CHESTERMAN'05, OLIVER E. BUCKLEY, JOSEPH J. SNYDER'44, DONALD DAVID, RAYMOND STEVENS'17, JOSEPH W. POWELL, RALPH T. JOPE'28.

By Election

Announcement was made on April 25 that LUKE E. SAWYER'10 has been elected president of the Babcock and Wilcox Tube Company.

IRVING W. WILSON'11 is the new president of the Aluminum Company of America.

Effective May 7, CHARLES ALLEN THOMAS'24 became president of the Monsanto Chemical Company.

AUGUSTUS J. WELLINGS'27, Rear Admiral, U.S.N., is now the commander of amphibious training for the United States Atlantic Fleet.

The Climax Molybdenum Company has announced the appointment of CARROLL L. WILSON'32 as the director of its recently formed industrial development department.

ROBERT G. MILLAR'40 was elected president of Tracerlab, Inc., at the annual meeting of the board of directors.

Obituary

FREDERICK S. HOLLIS'90, December 12.*
EDWARD S. HOLMES'90, December 2.*
ARTHUR L. JACOBS'92, in May, 1950.*
WILLIAM E. SCALES'92, April 3.
WILLIAM H. KING'94, March 20.*
MRS. ELIZABETH S. WATSON'94, April 23, 1948.*

GEORGE W. HAYDEN'95, April 20.
ALFRED L. SIMMONS'95, February 28.*
FRANK D. CLARK'96, March 9.*
CALVIN I. CROCKER'96, February 15.*
AMOS G. ROBINSON'96, March 8.
ALBA H. WARREN'96, March 27, 1950.*
GEORGE H. MCCARTHY'97, March 26.
EDWARD W. SIBLEY'99, April 7.
CHARLES W. SWIFT'99, October 14.*
FRED S. ATKINSON'00, April 20.*
PAUL J. PITNER'03, July 19.

JOSEPH C. NYCE'04, December 31, 1949.*
ALBERT B. COATS'05, in December, 1950.*

ERNEST HARRAH'05, December 24.*
GEORGE A. HOOL'05, April 27.
MRS. JAMES W. SANTRY'05, June 17, 1950.*

CHARLES A. RAYMOND'06, May 19, 1949.
WALTER F. HUDSON'08, April 3.
READ I. RIPLEY'08, April 5.

ARTHUR M. ROSENBLATT'09, April 15, 1950.*

EUGENE S. ANDERSON'10, February 7.
HENRY SCHUMANN-HEINK'10, March 28.*
WALTER W. SCOFIELD, Jr., '10, March 25.*

ALICE S. WILLOUGHBY'10, March 8.*
EWAZO SUZUKI'11, April 4.*
HOUGHTON H. WHITHED'11, December 5.*
ULDRIC THOMPSON, Jr., '12, August 18, 1945.

ALFRED E. BANNISTER'15, March 10.
JULIAN K. FERGUSON'15, date unknown.
ANSELMO KRIGGER'17, February 11.*
BRUCE S. NICHOLS'17, in 1945.

ELLIOTT D. HARRINGTON'18, April 1.
JOSEPH E. FEINSILVER'19, in 1947.
ARTHUR E. WALES'19, April 17.

JOHN W. SCOTT'21, March 23.*
HARRY VICTOR'21, date unknown.*
EDWARD F. BOWDITCH'22, April 28.

CHARLES H. CUNNINGHAM'22, in 1949.*
MAURICE F. FAINSBERT'22, August 7.*
GABRIEL SMITH'22, February 12, 1948.

JOHN A. PRICE'24, August 9.*
RICHARD L. BERRY'30, November 18.*
MRS. MARSHALL W. JENNISON'30, June 2, 1950.*

PAUL T. JONES'30, January 30.*
WINSLOW V. FITCH'31, March 31.
RALPH A. CAMPELLO'32, September 26, 1946.

JOHN D. MACDONALD'32, January 3.
MICHAEL DEStEFANO'33, March 19, 1950.

CHARLES DOBONY'46, February 16, 1950.*
ROBERT H. OLSON'47, April 4.*

*Mentioned in class notes.

News FROM THE Clubs AND Classes

CLUB NOTES

M.I.T. Club of Central New York

Alumni of central New York enjoyed an excellent turkey dinner and an interesting discussion on computers at a reunion at the University Club of Syracuse on January 31. Charles R. Wayne, Head of the computer section in General Electric's Electronics Laboratory at Electronics Park, Syracuse, entitled his talk, "Digital Computers as Related to Automatic Business Machines and the Future." It was emphasized that computers are not human. They can not initiate thought, for well-planned program procedures are required to utilize computers. However, by employing new computation methods, the lawyer, doctor, insurance agent, banker, engineer, and others will be able to replace routine, humdrum clerical operations with dependable, more economical, automatic techniques.

The following were present: Theodore Cale, Jr., '43, John L. Cowan '47, Bernard H. Geyer, Jr., '48, Harold P. Gray '16, Edwin A. Gruppe '22, Luke S. Hayden '41, Richard Henderson '38, Walter E. Hopton '91, Fred S. Hungerford '24, David E. MacLeod '38, Richard J. Nickerson '49, Edward R. Orer '49, Herbert G. Reynolds '10, Dumont Rush '43, Jack L. Schultz '42, and Adolph L. Sebell '40. — ROBERT L. WOOLEY '41, *Secretary*, 10 Bradford Court, Syracuse 7, N.Y.

The M.I.T. Club of Chicago

Our good friend and fellow alumnus Jim Killian '26 came out from Boston to break bread with us on April 5 — the occasion, the Annual President's Dinner of our Chicago Club. Our only disappointment was that Mrs. Killian was unable to come with him. We had a turnout of 150 Alumni and wives at the Bismarck Hotel. Gus Bouscaren '04 made a splendid toastmaster. Bob Wise '28, our efficient dinner chairman, was ably assisted by Jim Newman '37. A musical trio played during the cocktail hour and dinner, and Dwight Taylor '26 led the singing.

Jim Killian gave us a good straight-from-the-shoulder talk about affairs at the Institute and a final report on the \$20,000,000 drive for funds which was concluded at Christmastime. The crowning contribution in this drive was the \$5,250,000 gift of Alfred P. Sloan, Jr., '95 for establishing a School of Industrial Management at M.I.T. Biggest news of the evening was when Dr. Killian announced that the Institute Corporation had been conducting a nationwide search for an outstanding man to head the new School

of Management and that they had settled upon one of our own Chicago Alumni seated at the moment across the hall. To our amazement and gratification this outstanding man turned out to be our own Penn Brooks '17, now vice-president of Sears Roebuck and Company, and director of at least a dozen industrial and financial concerns. Penn has a wealth of experience in big business and little business, a fine personality, a real interest in education and Institute affairs, all of which qualify him extremely well for the job ahead. Here are our congratulations and best wishes to Penn Brooks. — PHILIP L. COLEMAN '23, *Secretary*, 208 South La Salle Street, Chicago 4, Ill.

The M.I.T. Club of Cuba

On January 8, at a luncheon meeting of the officers and former presidents, plans were completed for the winter meeting of the Club. On January 23, at half past eight in the evening, there were already a number of couples in gay conversation on the upper floor of the International Nautical Club of Havana, and, not much later, the group was complete.

There followed a unanimous reaction of favorable comment on the choice of the meeting place. The room was of the right size for the reunion, the location on the first pier of the harbor, overlooking the bay in the moonlight, made the spot an ideal one for the occasion. All those that regularly attend the meetings were very pleased because of the presence of Luciano de Goicoechea '12, Professor of electrical engineering at Havana University, and he himself was so impressed by the success of this first reunion for him, that he promised to be a regular attendant in the future.

New members, recently graduated, were heartily welcomed: William S. Chambers '50 and Blas Mazzeo '50, the latter with his charming fiancée, Alicia Iznaga. Keeping their good record of loyalty, there was the small alumni group coming from Central Hershey, in spite of the fact that said factory had started its sugar cane grinding season: Mr. and Mrs. Justo Luis Michelena '25, Mr. and Mrs. Jose A. Villamil '38, Mr. and Mrs. Alberto O. Villamil '42, Angel Figueredo '47 and Alicia Otero.

Recently married couples, since the last previous meeting, were congratulated by all. They were Mr. and Mrs. Antonio Badia '43, Mr. and Mrs. Gonzalo C. Docal '44 and Mr. and Mrs. Manuel A. Cadenas '45. This trio has been very efficient in conducting the internal publicity and collecting department of the Club, deserving the happiness they have now attained. Former presidents and their wives were also present: Mr. and Mrs. Antonio Helier Rodriguez '21 and Mr. and Mrs. Miguel F. Amezcaga '24.

Others present were: Mr. and Mrs. Gaspar Vizoso '31, Mr. and Mrs. Juan E.

Chibas '31, Mr. and Mrs. Hari Cruz Bustillo '32, Mr. and Mrs. Pedro J. Mari '37, Roberto R. Arellano '40, Mr. and Mrs. Alfredo M. Pedraza '41, Gustavo a Calleja '43 with Raquel Reyes, Francisco Vazquez '44, Luis Larragoiti, Fausto G. Hidalgo '45, Ignacio Mora '47 with Sara Pereda, Luis A. Suarez '48, and Salomon Heisler '48.

Because our official *chroniqueur* is on strike, this report has been prepared by — A. H. RODRIGUEZ '21, Calle 19, No. 506, Vedado, Habana, Cuba.

M.I.T. Club of Kentucky

The Alumni in this area held their annual election at a dinner meeting on March 26 at the Henry Clay Hotel, Louisville. Archie P. Cochran '20, President of the Cochran Foil Company, who did an outstanding job as chairman of the Development Fund campaign for this region, was elected president; Craig P. Hazelet '18 of Hazelet and Erdal, vice-president; and Frank P. Wardwell '38 of American Air Filter Company, Inc., secretary. An enthusiastic vote of thanks was given to the retiring officers, Melvin Sack '28, Arthur King '35 and Arthur Cary '34, for their energetic leadership as president, vice-president and secretary, respectively, and for the active part they played in the Development Fund campaign. Sack has accepted candidacy to the National Nominating Committee.

Thomas H. Pigford '48, Director of the M.I.T. Engineering Practice School at Oak Ridge, gave a very interesting and entertaining talk on recent developments in nuclear engineering and its possible peacetime applications. Using excellent scale models, slides, and movies, Professor Pigford presented a very lucid explanation of nuclear power principles and the engineering problems involved. As proven by the general participation in the question period, Tom was successful in making his talk equally interesting to those of us who have forgotten much of our technical training, and to those who are still active in advanced engineering work. His souvenir, safely radioactive dimes mounted on an explanation chart, were highly interesting to both the financial and engineering minds. Professor Pigford was accompanied by his charming wife, a former member of the M.I.T. metallurgical staff.

The following Alumni attended the dinner: Alfred L. Coupe '04, Everett R. Cowen '07, Frederick H. Stover '10, Craig P. Hazelet '18, Mason S. Noyes '19, Charles E. Breitbeil '22, Albert M. Prentiss '25, Albert L. Entwistle '26, Melvin Sack '28, Victor J. Gerdes '30, Howard J. Wood '31, Kennedy H. Clark '33, Allan K. Cook '34, Arthur Cary '34, Arthur M. King, Jr., '35, Frank W. Schoettler '36, Frank P. Wardwell '38, S. Edward Yoder '42, Lawrence S. Churchill, Jr., '44, and John H. Dedrick, Jr., '48.

We sincerely hope that visitors and new residents will contact us so that we can extend immediate Louisville hospitality and include them in the active program planned for the coming year. — FRANK P. WARDWELL '38, *Secretary*, 215 Central Avenue, Louisville 8, Ky. Telephone: Calhoun 3611 or Highland 6699-R.

M.I.T. Club of Milwaukee

A baker's dozen of our members journeyed to Chicago on January 27 to participate in the Midwest Alumni Regional Conference held at the Museum of Science and Industry. Those who went were well rewarded for their effort, and were quite outspoken in their tribute to the Institute and to the Chicago Club in making this event possible. — The next function of our Milwaukee group occurred on the evening of February 28 at the University Club in Milwaukee, when Max Nohl '35 gave a most interesting talk, illustrated with movies, describing the unending search and exploration for what is believed to be Captain Kidd's buried treasure on Oak Island off Nova Scotia.

On March 30, our traditional meeting for high school principals and preparatory school headmasters was held at the Wisconsin Club. Our guest speaker, D. A. Dudley of the M.I.T. English and History Department and assistant to the director of admissions gave an excellent review of the entrance requirements for admission to Technology, the approximate costs to be encountered in attaining an education at Cambridge, the assistance possible to a student in the form of scholarships or loans, and the general aims that the Institute has in developing men and women for service to themselves and to others. The regular meeting was followed by a question-and-answer period in which the high school principals participated quite actively.

Our next regular meeting was scheduled for May, at which time election of officers was to be the principal business. This year's activities will be culminated with a picnic for members and their families, as is the custom, and it was announced at the March meeting that Harold Koch '22 has again extended the use of his grounds at Pewaukee Lake for this affair. — EMERSON J. VAN PATTEN '24, *Secretary*, 6160 North Kent Avenue, Milwaukee 11, Wis.

The M.I.T. Club of New York

The fast-approaching June 29 golf outing at the Scarsdale Country Club is growing and growing. More members have indicated they will be there than for any recent outing of the Club. Our annual meeting at the clubhouse on 40th Street takes place as this goes to press.

In April, the spring dance attracted approximately 50 couples. Chairman John Plantinga '45 used scientific forecasting in ordering quantities of beverages and sandwiches. Don Henri's orchestra kept us dancing until the early morning hours. Everyone had a very good time.

As a "cooling" summer project, the Steak-Stein Dinner Committee is sampling various places as part of its program

to organize a big party for this coming October. — G. PETER GRANT, JR. '35, *Secretary*, Grant Photo Products, Inc., 401 Broadway, New York, N.Y.

M.I.T. Club of Schenectady

The March meeting of the Club found 19 Alumni assembled at Ferro's to enjoy luncheon and to hear A. C. Stevens, assistant to the manager of the Schenectady Works, General Electric Company, discuss the "What and Why of Labor Relations." Mr. Stevens pointed out that very little missionary work in the interests of employees was accomplished before 1930. Union activities from 1930 on grew at a rapid pace until 1936, when the Wagner Act helped to more clearly define a relationship between industry and organized labor. The Wagner Act remained in effect until 1948 when it was amended by the Taft-Hartley Act.

Present at the luncheon, and participating in the discussion which followed were: J. B. Taylor '97, P. M. Currier '14, F. F. Buckland '20, Benjamin Wilbur '32, C. F. Barrett, Jr. '34, J. H. Burnham '34, L. H. Dee '35, L. G. Peterson '36, J. E. Acker '38, P. J. Joyce '41, D. C. Berkey '42, W. B. Rodemann '44, H. E. Harris '44, D. P. Strang '45. Also Messrs. J. R. Gardener, F. Baker, P. Vaughn, R. E. Wilson, and G. H. Myers. — EDWIN S. LAWRENCE '47, *Secretary*, General Electric Company, Building 99, Schenectady 5, N.Y.

M.I.T. Club of Southern California

Many thanks are due the Alumni who generously supported the 1951 directory with advertisements and gifts. The project is self-supporting and will also make a substantial addition to the general club funds. This is due to the management of Page Golsan, Jr. '34, chairman of the directory committee, and now club president, and to the many workers whose names will be found in the directory. — Anyone interested in completing an unsigned pledge to the Development Fund may contact Mrs. Hoffman, Du 4-4989. The remittances are made payable to M.I.T. and are mailed to Cambridge.

The board of governors met at the Chapman Park on April 4. Treasurer MacCallum '24 distributed copies of the expenses and receipts which have occurred since he took office showing a very satisfactory response in payment of memberships. Program Chairman Cunningham '27 has plans for an unusually interesting meeting. Class secretaries, Maltby '22, Cullison '41 and McDowell '45 were welcomed to the executive group and added their counsel. The officers present were: Beebe '10, Morton '13, Springfield '15, Row '23, Hereford '24, Herrick '24, MacCallum '24, Cunningham '27, Hiller '31, Golsan '34, Wyle '41 and Stanley '44.

Hereford '24, membership chairman, presented the draft of a very illuminating letter to be sent to all Alumni in this area. The replies will give the Club another big boost. — Persons who wish to order beaver rings can obtain full information from the Secretary. — HIRAM E. BEEBE '10, *Secretary*, 1847 North Wilcox Avenue, Hollywood 28, Calif.

CLASS NOTES

• 1892 •

A slip-up in the printer's office accounts for the late appearance of the following notes which the Secretary prepared for the April issue of *The Review*. — He has very little to report except that Arthur Ober and he represented the Class at the midwinter meeting of the Alumni Association in Walker Memorial on February 1, and heard the pleasing report of Marshall B. Dalton '15, on the success of the Development Program, including the gift of Alfred Sloan to establish a School of Industrial Management. The program also included brief talks from Dr. Compton and President Killian on the present state of the Institute, after which the gathering of approximately 1,000 Alumni was entertained by the very interesting program under the direction of Dean Harrison.

Carlson and Mrs. Carlson were spending the winter in Florida. Doc Worthington is still actively engaged in his physician's practice in Dedham. The Secretary has received a brief notice from B. P. DuBois from the Wardman Hotel, Washington, D. C. Changes of address: William W. Green, I, to 953 South Street, Redding, Calif.; and Percival B. Metcalf, who was with us a short time, to 7 Arlington Street, Cambridge. Notice has been recently received at the Alumni Office of the death of Arthur L. Jacobs. Jacobs was with us in Course VI and spent the latter part of his career, at least, with the Westinghouse Electric Company in their office at 10 High Street, Boston.

We also have news from the Treasurer's Office that funds from the estate of Alice Metcalf, sister of our late classmate Leonard Metcalf, have been received by M.I.T. and are being applied to the Leonard Metcalf Memorial Fund. Also that from the estate of Andrew P. Newman, who died in 1931, a fund has recently been setup for "worthy and deserving students so that they may be assisted in securing an education." Newman was with us in Course I. — CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

• 1890 •

We hope that our April notes, which did not appear until May, were not overlooked. Our Class offers notes only to every other number of *The Review*, but the April notes were lost in the printer's office.

Once more, we have the loss of two members to report, Frederick S. Hollis and E. S. Holmes. Hollis died on December 12, 1950, while on a visit to his daughter in Valley Stream, N.Y. From the *Worcester Telegram* we learn that after graduating in Chemistry from M.I.T., he received the degree of doctor of science at Johns Hopkins University. Our class records show that in 1897 he was a chemist with the Boston Water Works, in 1904 an instructor in chemistry

at the Yale Medical School, and in 1906 "instructor in Medical and Sanitary Chemistry" at Tufts Medical School. His daughter writes: "In 1910 we went to Indianapolis where he taught at the medical school of the University of Indiana. In 1914 we moved to his farm in Charlton, Mass., where father lived until the time of his death. I know that he did considerable work with the Massachusetts State Health Department, and very likely he was the assistant of Professor Segwick. Father's chief interests were antiques and flowers; but after going to the farm, he had very little time to pursue these hobbies. In Indianapolis, and in Newton, too, I can remember that his dahlia garden was a showplace." Hollis' name has not been on our class list of living members for several years, as neither I nor the Alumni Office have been able to get any information about him, and it was assumed that he had passed on.

Charles Sherman writes that Edward S. Holmes commuted to Boston with him during Holmes' brief days at the Institute. He refers to Holmes as "Fat Eddie, who must have weighed 200 pounds," and adds "I have a faint recollection that near the end of the first year he told me that he was going to the University of Chicago next year." The Western Electric Company reports that Holmes started with them in 1890 in the Cable department. From 1903 to 1905 he was connected with the general purchasing and sales department. From 1905 to 1911 he was manager of the Indianapolis Distributing House and from 1911 to 1931 assistant manager of the Chicago Distributing House. He retired in 1931 and died in December, 1950, at the age of 82.

The Secretary and Mrs. Packard had planned to get to St. Petersburg, Fla., to call on William Flint but were obliged to give it up. He wrote: "I plan to go north about the 8th of May. That is my usual time and I avoid much of the crowd on the train. It is about five years that I have been going up by train and leaving my old car here. I use it but little and for short trips. I think the train trip is on the whole much easier than driving." Secretary Severance suggests that we try and get some information for these class notes from Bertram Davis, John deBuliet, Cassius Foster, Henry Hayden, Mrs. Herbert Magoun, George L. Nelson, and Leon Wertheimer. — **GEORGE A. PACKARD, Secretary**, 53 State Street, Boston, Mass. **CHARLES W. SHERMAN, Assistant Secretary**, 16 Myrtle Street, Belmont 78, Mass.

● 1894 ●

It is with great sorrow that the Secretary reports the death of William Herbert King at his home, 50 Morningside Drive, New York City, on March 20, at the age of 79. No Alumnus has been more loyal to the Institute or to his Class. Billie, as he was familiarly known to all of us, was a captain of one of the companies in our Freshman Battalion, and throughout his four years was extremely popular although he did not participate actively in fraternity or athletic matters. During his senior year, he was one of the editorial board of *The Tech*.

At the beginning of the second year, King enrolled in Chemical Engineering;

but finding his interests turning more and more to history, economics, and philosophical matters, he transferred to the Course in General Studies at the end of the year and graduated in that Department with a fine record. It was here, under the instruction of Professors Dewey, Levermore, and Currier, and the occasional contacts with President Walker, that King laid the foundations for his future career which he pursued with such brilliance and success. King was born in St. Louis, but his family removed to Melrose, and here he prepared for the Institute. On graduation with his S. B. in General Studies, he enrolled for his graduate work at Harvard, and received an A.M. degree in 1895. After teaching for a year at the Powder Point School in Duxbury, he was appointed a Fellow in Columbia University, and three years later received his law degree from the New York Law School. On his graduation he became secretary to the late Morgan J. O'Brien, then a justice of the Appellate division of the State Supreme Court, and spent five fruitful years in the office of this distinguished jurist. Thereupon he entered the Corporation Counsel's office where he became recognized as a leading tax law expert, and was head of the division of taxes from 1916 until he retired in 1934. During this period he was instrumental in many cases in interpreting the law of assessments, real estate exemptions, special franchise assessments, bank taxes and taxes on money capital.

After his retirement, King became associated with Eugene Fay, an attorney specializing in municipal taxes. Mr. Fay died in 1941, and King then became the senior partner of the law firm of King, Frank and Whyman until his retirement in 1950. Throughout his career, King was deeply interested in the Institute. He was a Term Member of the Corporation from 1915 to 1920, and had served on committees during this time. His interest in the Class was constant and most helpful, and he rarely missed a class reunion and frequently came to Boston for the annual alumni days and the banquets. All members of the Class who knew him will mourn the loss of a true and sincere friend.

King was the author of several law books dealing with tax appeals and related subjects. He had been a governor of the Real Estate Board of New York. He was also a member of the University Club and the M.I.T. Club of New York, in both of which he found much pleasure. Members of the Class who have attended our five-year reunions will remember with high regard his charming wife, Martha, and his daughter, Patricia, now Mrs. Norman Mason of Westport, Conn. To them and to his son-in-law the deep sympathy of all would certainly be extended.

It is also a sad duty to record the death of Mrs. Ferdinand A. Schiertz, wife of our much beloved classmate. She had also added much to the enjoyment of our recent reunions, and found great pleasure in attending them with her husband. Our special sympathy is extended to Schiertz in his great loss, and it is certain that words of sympathy sent to him at his place of residence, 2055 Columbus Avenue, Roxbury, would be greatly appreciated.

Information has recently come to the Institute that Mrs. Elizabeth S. Watson, who was for a time a special student in Geology and registered as of '94, died at Pass-A-Grille, Fla., on April 23, 1948. It is a matter of interest that both she and her husband, Thomas A. Watson, who had assisted Alexander Graham Bell in his researches on the early development of the telephone, came to the Institute when past middle life and engaged in study as members of our Class.

Recent mail has brought renewed evidence of the continuous scientific activity of Charles G. Abbot, who has been research associate of the Smithsonian Institution since his retirement as Secretary of that noted institution several years ago. Abbot has continued an interesting study of the effect of solar radiation on the precipitation and the temperature of Washington on special days each month which he has been able to predict with a high degree of accuracy. These studies began as long ago as 1924 and are still being conducted with his usual infinite care.

The Secretary has recently returned from a combined business and pleasure trip to the West Coast, primarily in the interest of the Refrigeration Research Foundation, Inc., of which he is the chairman of the board of governors, but almost equally for the enjoyment to be found in meeting former students and classmates. Business took him to Toledo, Chicago, Kansas City, Colorado Springs, Los Angeles, San Francisco, Portland and Seattle, each for periods of one to three days. The high spot in the trip was the meeting with Austin Sperry and John C. Nowell at a luncheon arranged by Sperry at the Bohemian Club. This "class reunion," as has been the case in several former years, was a most delightful one, and many events of student days and the 57 years since were brought out of the stores of memory. For men approaching the fourscore-year mark, it might be considered as a rather unusual and happy "bull session," in which our own and our family activities received attention. The Secretary alone could not expatiate upon the high qualities of his great-grandchildren! Austin and Jack were both in excellent health and we look forward to more of these gatherings in future years. Other Technology men, chiefly former students of the Secretary, who added greatly to his pleasure by entertaining him on this rapid-transit trip, were: W. L. Campbell '15, H. P. Champlain '31, Hugh Griswold '29, P. K. Bates '24, and H. W. McCurdy '22. Mention also should be made of Colonel S. C. Vestal, who for several years was in charge of Military Science at the Institute, and who retains a deep interest in its remarkable development. Since our birthdays are but a day apart, the Colonel and the Secretary had a joint birthday celebration at the Vestal home in Pasadena which was an occasion of special satisfaction, and another of the high spots of the Secretary's trip. — **SAMUEL C. PRESCOTT, Secretary**, Room 5-213, M.I.T., Cambridge 39, Mass.

● 1895 ●

It is most refreshing to learn of the numerous activities of the wife of one of our beloved classmates, George W. Hay-

den. From the New Hampshire Sunday News, we learn the following: "Today, more than ever, newspapers are considering the problems of those who are growing old. Social Security, employment, retirement, pensions, special housing, medical care, recreation all are very much in the headlines. One of the most important problems the aging must face is loneliness."

"Following in the steps of the General Federation of Women's Clubs, the New Hampshire Federation has created a new department, *Living the Later Years*, or gerontology, with Mrs. Marion S. Hayden of Center Ossipee as chairman of the New Hampshire Department. Mrs. Hayden is most enthusiastic about her new work and her sympathetic understanding of those who are growing old makes her unusually well fitted for the office."

"Mrs. Hayden, the wife of George W. Hayden, with her husband, moved from Winchester, Mass., to Center Ossipee in March 1945. 'Most of my children finished school in Winchester, going on from there to various colleges. Four girls and their husbands, a son and his wife, represent many colleges: Wellesley, M.I.T., Penn State, University of Vermont, Middlebury, Antioch, Tufts, Boston University, Vesper George School of Art, Chamberline School of Merchandising, New York and Buffalo Schools of Social Science,' she explained. Mrs. Hayden, herself, is not a college graduate, but Mr. Hayden was graduated from M.I.T. in 1895. They have 10 grandchildren, 6 boys and 4 girls. Since residing in Ossipee Mrs. Hayden has been most active in church and club work. She is a member of the Center Ossipee Historical Society, the Tamworth Garden Club, County Extension Group, Red Cross, and formed a teen-age 4H club. Her hobbies include gardening, raising house plants, especially begonias, making Christmas wreaths and painting cones, and collecting prints, steel engravings, old art books, portfolios, fans, painting in oil, and costuming pageants."

Alfred Leslie Simmons, I, passed away on February 28, last, at his home, 29 Queensberry Street, Boston. After leaving Technology, he worked approximately 10 years with the New York State Highway Department. Returning to Massachusetts, he served with the Metropolitan Water Board and its successor for some seven years. Finally he connected with the Massachusetts Highway Commission until he retired in 1942. He is survived by his wife, twin daughters in New York City, and a son in North Easton, Mass.

Arthur F. Nesbit, Course VI, still resides in Wilkinsburg, Pa., but at 711 Mill Street. Eddie Alden, with his wife, started their annual trek south to Florida last December, but up to the last part of March, he was no farther south than Jacksonville Beach. From his recent letter we learn that he had a wonderful time visiting their many relatives, which naturally slowed their progress. Alas, when he arrived at Jacksonville Beach, he discovered that a double house he owns was infested with termites. This was some discovery. Repairs were necessary including the painting of the whole structure. In the meantime, they secured

quarters in a Motel Apartment, near the beach, which provided a long room, with two double beds, electric refrigerator, and gas stove. Finally housed, he devoted his energy and attention to the extermination of the termites. Let's hope he will write an article on his findings. Their next move is to St. Petersburg via Daytona Beach. We trust he will have no more mishaps to delay his scheduled arrival home in time for the Alumni Day.

A very interesting reference to the business career of Alfred P. Sloan, Jr., was published in the Sunday edition of the Philadelphia *Inquirer* of January 28 last. In part we proudly relate the following: "Like most successful men, Alfred P. Sloan, Jr., has been the subject of a great deal of comment and analysis. The more so in his case, because Sloan never was a showman, and the factors contributing to his success have to be sought out and sifted. He has been called an energetic non-genius, a careful man with a flair, and, more negatively, a man whose abilities found fortunate matching opportunities. Each of these definitions is partly true. But none fully explains how Sloan rose from a \$50-a-month draftsman's job to a top post in one of the nation's biggest businesses. Perhaps the best brief definition of Sloan's success is that he was an exact, hardworking man who happened into an expanding market for his abilities."

"Certainly his unspectacular brand of business acumen and equally sound engineering knowledge were the best-in-the-world mixture for the swiftly growing motor industry. He literally grew up with the automobile; then stepped in to take control of the largest auto manufacturing combine when the hunches of the genius-mechanics and smart promoters were wearing thin. Few know as much about the automobile industry; no one knows more. Therefore Sloan's recent disturbance over the fact that most engineers know as little about business as business men know about engineering, earned a great deal of attention. As board chairman of General Motors, he realizes better than most how dependent today's industry is on close cooperation between these two fields. 'Our civilization is so involved,' he says, 'we need people who know how to put the pieces together.'"

"To help train these people, Sloan recently gave his alma mater, . . . Technology, \$5,250,000. The money will be used to establish a School of Industrial Management, where science, engineering, and research will be thoroughly mixed with the methods and problems of industrial management. The money could not have come from a more fitting source. For Sloan is one of those rarities, a top business executive with a solid engineering background."

"Alfred Sloan, Jr., was working for the Hyatt Roller Bearing Company when its chronic financial indigestion became acute. Because he firmly believed in the salability of the product, Sloan persuaded his father to back the young company in a modest way. Then he built it up to the \$10,000,000 a year mark, sold it to the newly formed General Motors for \$13,500,000, and went on to become executive vice-president, then president of

the larger concern. Thus briefly stated, his climb sounds easy. Actually Sloan put in two average work days each 24 hours, and combined this carnival of effort with an almost perfect blend of engineering and business knowledge. His code is simple: 'Get all the facts. Recognize the equities of all concerned. Realize the necessity of doing a better job every day. Keep an open mind and work hard. The last is most important. There is no short cut.'" — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

• 1896 •

Those of us who are expecting to gather at the New Ocean House for our 55th reunion during the week end of June 10 are eagerly awaiting this great event. To those who are unable to make the trip, we extend our sincere regrets. Make a great effort to join the Old Guard, for those of us who are on the inside feel that the schedule planned should be of unusual interest. As of this writing, 20 classmates plan to be present. H. S. Baldwin, Frederick Damon and the Secretary went to Swampscott on April 3 to discuss final plans with the management of the New Ocean House. At the moment, we expect to occupy a cottage on the water-side of the main highway looking out over Nahant and beyond. There is a large covered piazza which will afford us a wonderful view of the seacoast and will give us an excellent outdoor parlor where we can have our general reception, in small groups or in a single unit, and where the recounting of our past five years' experiences may be enjoyed.

Gibson, who has raised the famous lilac hedges and rose garden, talked with us at some length on April 4 relative to our Friday afternoon pilgrimage to his beautiful Nahant estate. He laments the fact that our reunion is poorly timed as to the charm of his horticultural wizardry; our dates are too late for his lilacs and too early for the roses. He has been in poor health this spring but expects to be able to hold this informal class reception on Friday afternoon, June 8.

It is with regret that we note the passing of our fellow classmates. Alba H. Warren of 520 West Mallory Street, Pensacola, Fla., died on March 27, 1950; Frank D. Clark of Elsinore, Calif., (Box 9, Route 1) died on March 9, 1951. The following letter was received from Mrs. Calvin I. Crocker: "I am enclosing a clipping from the New York *Times* of February 17 telling of the death of my husband. . . . He took great interest in The Review and often read aloud the class notes for 1896 to me, so that I almost felt I knew some of his classmates. He was always a quiet and studious person and perhaps for that reason did not know a great number of his classmates. But he always valued his work at M.I.T. and liked to tell me reminiscences of various classes and faculty members. Since his retirement, we have spent our summers at his family home on Pine Point, Maine, and have frequently gone to Florida for the winter."

The clipping to which Mrs. Crocker refers reads as follows: "Calvin I. Crocker of 384 Flax Hill Road, a retired civil engineer for the city of New York, died

[February 15]. . . Mr. Crocker, a native of Portland, Me., was the son of the late Ira and Emily Longfellow Crocker, and was a cousin of Henry Wadsworth Longfellow. A graduate of . . . Technology, he was with the New York City Department of Bridges for several years before World War I. He served as chief engineer for the city during the construction of the Queensboro Bridge and from 1920 until his retirement in 1934, he was chief engineer for ferries in the New York Department of Plants and Structures. Mr. Crocker was a captain in the Army in the first World War. Surviving are his widow, the former Ruth Broadhurst, and several nieces and nephews."

Myron L. Fuller wrote that he was leaving his home in Fort Myers, Fla., on April 15 for his summer place in Easton, Mass. He planned to drive north by way of Montgomery, Ala., where he expected to visit Professor F. K. Morris, who retired from the Department of Geology at M.I.T. in 1950, and now has a position with the United States 'Arctic-Desert-Tropic Information Center' at Maxwell Field near Montgomery. Myron also planned to stop in Tuscaloosa, Ala., to see former geological friends of Washington and China. May 2 was fixed as the date for the hearing in the Massachusetts' court on the question of Myron's Florida citizenship which has never been settled, although he has resided and voted in Ft. Myers for five years. If the decision is in his favor, he will recover several thousand dollars from state income taxes paid under protest in the meantime. He expects to attend the 55th reunion of the Class on at least one day.

The class balance in the Cambridge Trust Company as of April 20 was \$531.17. — JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge, Mass. FREDERICK W. DAMON, *Assistant Secretary*, 275 Broadway, Arlington 74, Mass.

• 1897 •

Supplementing our announcement in the March issue of the passing of Franklin E. Bragg of Bangor, Maine, on January 2, 1951, we are indebted to the *Bangor News* for the following: "Mr. Bragg was president of N. H. Bragg & Sons, dealers in iron and steel and heavy hardware, being the grandson of the founder of the business. Active in business until his death, he also was very active in civic affairs. He was chairman of the advisory board of the Salvation Army, president of the Home for Aged Men and of the Mount Hope Cemetery Corporation. He was a trustee of the Eastern Maine Music Festival Fund and of the Good Samaritan Home. As president of the Bangor Mechanic Association he was ex-officio vice president of the Board of Managers and Trustees of the Bangor Public Library. After the Bangor fire of 1911 Mr. Bragg was a member of the City Planning Commission which was active in planning the reconstruction of the city. He was county chairman of the First Liberty Loan drive in World War I. For many years he was president of the Home for Aged Women and was active in the formation of the Bangor-Brewer Community Chest. In business circles he was a director of the Merchants National Bank of Bangor, a

member of the New England Iron League and of the Bangor Chamber of Commerce. He was a former president of the New England Iron & Hardware Association, president of the Orono Pulp & Paper Corporation until it merged with the Eastern Corporation and a director of the Eastern Corporation. At the Institute he was a member of the Delta Upsilon fraternity. He leaves his wife, one daughter, one son, six grandsons and one sister."

Franklin E. Bragg was a loyal classmate, and as his record shows he was very active in business and civic organizations in his native city, always giving his best to the furtherance of better government, better business conditions, better living conditions and a more gracious life for everyone. He will be sadly missed in Bangor. The most sincere sympathy of the Class is extended to Mrs. Bragg and the family in their great loss. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

• 1899 •

Classmates will all be glad to learn that Professor Miles S. Sherrill is well on the road to recovery from injuries received in an automobile accident reported in the April issue. While still under the care of a physician at this writing, he is able to get outdoors and walk with the aid of a cane. The prognosis is that he will be able to walk as well as ever within a few months. Congratulations, Miles, you certainly were lucky to come out of such a bad accident so well.

Word has been received of the death of Charles W. Swift of Miami, Fla., on October 14, 1950. No further details are available at this writing.

According to a newspaper report, the Towle Manufacturing Company of Newburyport was robbed of its payroll of \$35,000 on April 13 by five masked gunmen. This is reported to be the biggest armed robbery in Massachusetts since the Brink's, Inc., holdup on January 17, 1950. Will Kinsman is the president of the company and Francis Bingham is also an official. — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. MILES S. RICHMOND, *Assistant Secretary*, 201 Devonshire Street, Boston 10, Mass.

• 1900 •

A reunion of the Class of 1900 will be held at The Pines, Cotuit, Mass., June 12 to 14 and each attendant should arrange for his reservations directly with the hotel manager, Mr. C. D. Crawford. Since the notes for last month's Review were written, we have heard from Joe Draper, Sumner Manley, and Arthur Walworth that they will come. We also enjoyed having Bill Clarke call at our home to confirm his promise to attend. This will be the first time that he has met with us.

Charles Hughes writes: "The way various engineering matters are shaping up for me, plus the possibility of preparing another edition of the present third edition of Hughes *Handbook of ship calculations, construction and operation*, Simmons-Boardman Publishing Corporation, New York, I can make no future plans. On going over the class letters in The Review — besides giving family hap-

penings, why not also include engineering activities of class members? For instance, one who has been in Turkey, Egypt, Venezuela, or other foreign countries surely has had experiences that would make interesting reading." The Secretary heartily agrees and would be only too happy to include such items and letters in the class notes if only members of the Class would supply him with the material.

From the Wilton, Conn., *Bulletin*: "Mr. and Mrs. Maurice Davenport of Forge Road, Silvermine, marked their golden wedding anniversary last Wednesday. They were married on St. Valentine's Day, 1901, in Cambridge, Mass. Mrs. Davenport is the former Estella Cowen and Mr. Davenport is a member of the Class of 1900, M.I.T." Many of the Class will remember Davenport as he was quite active in class affairs during our first two years.

The Boston *Herald* notes the death of Fred S. Atkinson at his home, 162 Cypress Street, Brookline, on April 20. He was with us in Course X for a short time. — ELBERT G. ALLEN, *Secretary*, 11 Richfield Road, West Newton 65, Mass.

• 1904 •

Gus Munster has sent us a letter he received from Henry Stevens, the principal parts of which are as follows: "In The Review, I found an item about the Tech Show, 'The Grand Duke' presented at the Hollis Street Theater in May, 1901. I was a chorus girl in that show and in the middle of our big dance my wig and hat came off, leaving me shorn of adornment. Ed Parker is very fond of speaking about it and describing what I was saying, from the expression on my face.

"In the cast of the show were included '04 men such as Herman O. Blatt, Thomas G. McDougall, Paul McClary Paine, better known as, Peacham, and the late Selskar Gunn. I do not remember McDougall, and Blatt I had not thought of for many years, but I do remember him. Of course Peacham and Gunny are well-remembered figures. Also in the show were the late Allan Winter Rowe '01, the late Matthew C. Brush '01, and William J. Mixer '02 all of whom I remember well. Mixer had a brother Charles G. Mixer, also '02. After Technology, they went to Harvard Medical and have been noted Boston surgeons for years and had a hospital on Longwood Avenue.

"The day after you were here, I received an amusing letter from Ed Parker written in rhyme, and detailing certain facts about some of our classmates, such as you, Gene, Dave Sutton, Harry Kendall, Dwight Fellows; the Nantasket Reunion in 1916, the Mount Vernon one; the late Don Galusha, Ovington, Jack Draper, Charlie Stebbins; my experience in the Tech Show, and more. The fellow really has a memory and poetic ability and the thing is a work of art." This letter indicates that Steve is in good shape and your volunteer secretaries suggest that he take over his job again as permanent secretary. How about it, Steve?

The recent letter to the Class has brought replies from George Tompson of Wakefield who reports himself in poor health, from J. Earl Cunningham of Bos-

ton who reports he has retired, from Jasper Crane of Wilmington, Del., who hopes to be at the 50th reunion, and from George Curtis of Pittsfield, Mass., who writes as follows: "Always glad to receive the class news as edited by you and Carle. I hope Steve will come along O.K. Enjoyed the 45th at East Bay Lodge and would be pleased if that location were chosen for the 50th. Went skiing half a dozen times this winter but had a very conservative life here in this dream city. June 17 next, old father time taps me on the shoulder for the count of 70, necessitating my retirement to the side lines after 45 years with the state, the last 30 of which as district highway engineer. I have noted a paucity of class notes recently due principally to others like myself who have not contributed any." George is probably the only man in the Class who is still able to use skis for recreation.

Letters were received from Dwight Fellows, who expects to attend Alumni Day on June 11 and says he will be retired in August; and from Fred Anderson of Sebring, Fla., who also hopes to attend Alumni Day. Fred is trying without much luck to find a cure for his severe case of bronchial asthma. He is coming to Boston to consult a clinic. And, from E. A. Holbrook who confirms his permanent retirement, previously reported, as dean of engineering of the University of Pittsburgh. His permanent address continues in Pittsburgh but he plans to spend long summers in Winchester, N. H. (R.D. 2 Richmond). Incidentally, Shorty hopes to be present at Alumni Day at M.I.T. — Our last edition of class notes stated that Tammy Rockwood had a new job after officially retiring. He is chief structural engineer for Ganteaume and McMullin, Boston.

The following note was received from Peacham Paine: "It was certainly good to have the reminder of the 50-year gathering and curiously enough, only a week or two ago I was holding forth to Mrs. Paine that we have a date in June of 1954 to make our first attendance at a class gathering. No one will know me, but that's all right because neither will I know them, except Holbrook, of course, whom I have seen at rare intervals through the years. There is nothing newsworthy about me. Just keep on working in the oil fields, trying to find and produce a few bar'ls; and also trying to accomplish that retirement proposition which you mentioned in your letter. See you in June '54."

The alumni office reports that Joe Nyce, VI, passed away on December 31, 1949. No further details are available.

If these notes are read before June 11, plan to be present at the Alumni festivities on that day. There are indications that a good representation of '04 men will turn out. — EUGENE H. RUSSELL, JR., 82 Devonshire Street, Boston 9, Mass. CARLE R. HAYWARD, Room 8-109, M.I.T., Cambridge 39, Mass.

• 1905 •

A good deal of the news this month concerns classmates who were in Florida. Waldo and Mrs. Turner were at their winter home at Vero Beach; Sidney and

Mrs. Strickland at "Trade Winds," Melbourne; Ralph and Grace Hadley at 406 Lakeview Avenue, Orlando; the Barriers were touring, last postal card from Largo. Through Clarence Gage, II, permanent resident at St. Petersburg, we learn that Harry and Mrs. Wentworth were at Vinoy Park Hotel there. Harry's health seems to have improved a bit since last year. Frank Webster, II, is back at Coral Gables, following intensive travel since the reunion last June. He spent last summer in Montane and Alberta, Canada, combining business (mustard seed) and pleasure, visiting Lake Louise, Banff and Glacier Park; in September, a two-month trip to the Passion Play at Oberammergau, thence through Italy, France, Switzerland, Germany, Liechtenstein, France and England. Frank ends, "all I can say is that it is a cockeyed world."

At the midwinter get-together at Walker Memorial on February 1, I saw Buff, Balkam, Babcock, Atwood and Grafton Perkins. Atwood had not attended a reunion or class get-together for 40 years. It was funny to see Atwood and Babcock, both Course VI, eyeing each other up and down, trying to find recognition, with Atwood finally saying, "say Babcock, you were best man at my wedding." Hadn't seen each other since.

Collier's magazine, January 6, 1951, in an article regarding the employment of oldsters in business, cites the experience of the W. and L.E. Gurley Company, Troy, N.Y. Their president, Charlie Smart, II, says: "Most so called 'problems' with older workers exist only in the minds of personnel managers. We've simply rid ourselves of common prejudices; we've proved them false." Willard Simpson, I, wouldn't care to have us include him in the oldster group, because he is working every day (has for 40 years) as a consulting engineer in San Antonio, Texas. He specializes in structural work, foundations and industrial plants. He apparently is in excellent health, says he is the only '05 in San Antonio and "gets quite a thrill in viewing the samples of our work throughout this part of the state."

Plans have been completed for an "off-year" (our 46th) reunion at East Bay Lodge, Osterville, Mass., on June 15, 16 and 17 with the opportunity of a longer Cape Cod vacation either before or afterwards. Official notices have been mailed to all members with request for reservations before June 10. Considering that those at our 45th at Oyster Harbors last year decided pretty generally never to miss another, this year's reunion should be well attended.

A letter from Harry M. Nabstedt, I, includes clippings with Harry's picture and a long story of his life and "doings," together with an editorial from a Davenport, Iowa, newspaper extolling Harry at the conclusion of a six-year term as president of the local school board. We quote: "A man of broad vision, and possessed of a rich fund of experience in the field of engineering, he was qualified in exceptional degree to assume leadership in the task of keeping education abreast of the demands which a growing community entailed. He recognized that the physical establishment required an orderly expansion. He was among the first to urge pur-

chase of land in areas which would at a later date have to be served by convenient schools. . . .

"He quickly familiarized himself with every phase of school activity, and his vision, energy and administrative talents projected him into the position of leadership which he exercised so vigorously, quietly and effectively. The Davenport school system has been most fortunate in having enjoyed the guidance in its development of such men as the retiring president. While recognizing the vital importance of modern physical facilities, he realized that buildings and equipment, however fine they might be, are not in themselves enough. It is the efficiency of the teaching staffs, and the morale which prevails among them and in the classroom, that establishes the standard by which schools are judged by educators. He understood the problems faced by them and his deep sympathy with their aims as well as needs was a notable contribution to the spirit which has done so much to promote the welfare and progress of our schools. Mr. Nabstedt may retire with full knowledge that his work has been most deeply appreciated by our people."

A news item adds: "Harry M. Nabstedt, as chairman of the special civic committee on a study as to whether or not construction of a combined city hall and courthouse for Davenport and Scott county is advisable, was pondering a report made by a Detroit engineering firm on the subject. Within a fortnight the report will be submitted to the public, and then a storm of public discussion will be aroused. As usual, Harry Nabstedt, the man who used to build dams in Mexico and South America before he 'retired' will be at the center of the whirlwind. This silver-haired old gentleman with the keen but good-humored eyes has been shouldering more tasks since 'Retirement' than anybody since Hercules. He often has his finger in more pies than that other 'retired' old hustler, Neff Wells.

"Currently Harry Nabstedt is not only chairman of the city hall-courthouse committee, but president of the Davenport school board and vice chairman of the City Plan commission. In addition to those 'heavy' jobs, he has a few lighter tasks such as president of the Rotary club, president of the Sunshine club, and officer or trustee of most of the Masonic bodies. Masonry has been his hobby in recent years, and we doubt if any man who got so late a start in local Masonic circles ever went thru so many chairs so fast, or carried so many titles in the order at once, as our good friend Harry Nabstedt. He is now a 33rd degree member, and if they had a 34th degree we are sure Harry would get it.

"He works at a civic task with the same ginger and enthusiasm that he used to devote to building dams in out-of-the-way parts of our continent. On the school board, where we have had our best view of him in action, he has a tremendous grasp of detail. He visits the various school properties regularly, and has an intimate knowledge of the problems under discussion. He gives this same intensive attention to the problems of each and every group he serves. His outstanding

community service, of course, was as chairman of the Scott county wartime rationing board. That job was a 'hot potato' if ever there was one, and he gave it his full time and energy. Deciding who would get automobile tires, who was entitled to more gasoline, how much fuel oil folks should have, and a dozen other such things was certainly a spot in which to make enemies. Harry Nabstedt held the job all thru the war period, and while he heard plenty of 'gripes' he left few if any permanent wounds. . . .

"Harry Nabstedt was born in Davenport some 70 years ago, despite his youthful appearance. He went to Phillips Exeter academy and MIT, and then spent his active business years as a dam-building engineer. . . . Then he 'retired' and came home to Davenport to rust and rusticate. Perhaps after he is 90 he may actually 'retire,' if folks don't keep thinking up new things for him to do." And Harry adds: "Was honored with the 33d degree in Scottish Rite Masonry in 1947. In 1949-1950 was president of the Davenport Rotary. Expect to attend the 50th reunion of my class at Exeter this year."

Ernest Harrah, II, died at his home in Mount Kisco, N.Y., on December 24, 1950. Ernest came to M.I.T. from St. Paul's School, Concord, N.H. He belonged to the Metropolitan Club and the Pilgrims, New York. He leaves a widow, two daughters and one son. — A letter mailed to Samuel S. Stevens at his last known address, Salem, Mass., was returned marked "deceased." Inquiry at the city clerk's office there fails to find any evidence. Anyone having any corroboration, please notify the Secretary.

Mrs. James W. Santry (Agnes Maroney, VII) died on June 17, 1950. — Albert B. Coats, latest address, Monterey, Calif., died there in December, 1950. Coats was a practicing architect in Phoenix, Ariz., in 1911. His comment in our *Ten Year Book* (1915) is interesting: "Am praying for a change in administration, so the American flag and citizens can get respect and protection, in pursuit of life, liberty and the right to make an honest living everywhere on God's green earth." By the way, who was president in 1915? And who said the same thing recently? Reward for first answers. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 69 Newbury Street, Boston 16, Mass.

• 1906 •

The class notes in the February Review advise that Otto Blackwell was awarded the Edison Medal by the American Institute of Electrical Engineers at the midwinter meeting in New York. We received a clipping from the Cape Cod *Standard Times*, Hyannis, Mass., of January 20. As Blackwell is a native of Bourne, it included an interesting account of his genealogy: "It is perhaps logical to feel that the distinguished record of Otto B. Blackwell and the fine creative abilities of his architect father and of the late Joseph Bailey Ellis (who was, until his recent death, head of the Department of Sculpture at Carnegie Institute in Pittsburgh and a great-grandson of Deacon Gershom Ellis who

was also Otto's great-grandfather and also a builder) are due in some measure to their heredity. Habits of intelligent and painstaking workmanship such as the old deacon gave to all the 'jobs' entrusted to him and which make his buildings today as sound as they were when constructed more than a century ago probably do give some sort of mental direction to a man's children and to later descendants. It may not be sentimental to suggest that as a thought for fathers of today who wish to see the United States grow strong and not merely in material ways but in that early American spirit and purpose that stood our forefathers in 'good stead' when they gave their strength to the building of the nation. Bourne may well be proud of the honor conferred on one of her sons and look upon it as a happy result of the heritage of integrity and honorable dealing which is a feature of so many of the present-day families of Cape Cod."

In this column we have had occasion to refer previously to our classmate M. J. Ahern (Father Ahern) who is senior professor in the department of science at Weston College. At present he is very active in the National Conference of Christians and Jews and is in much demand as a speaker in this connection. A few months ago your Secretary was a guest at a meeting of the local women's club and heard our classmate speak upon the subject, "Design for Racial and Religious Understanding." The Secretary made himself known to Father Ahern after the meeting and was assured that he remembered him in Technology but time did not give an opportunity for extended reminiscences.

The following from Sherley P. Newton: "After living in Brookfield for four years, with winters in Florida, we moved to a new house in Needham in the early winter. It seems good to be living in the Boston area again where there is so much more going on."

At this writing, the Secretary is putting the finishing touches on the notice for the 45th reunion. By the time you read this the reunion may be a thing of the past; therefore, nothing more can be done about the 45th in these notes. I think we will all agree that one of the signs of our advancing years is the accelerated rate at which time seems to pass. With this in mind, the 50th reunion will soon be on us and it is anticipated that we will make preliminary plans for a 50th at the 45th. Everyone will appreciate the importance of the 50th reunion and we should have it in mind constantly between now and 1956. — JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

• 1907 •

The Malden, Mass., *News* of March 20, 1951, contained the following story relating to one of our classmates: "Right after Pearl Harbor, Ernest A. Miner of Orlando, Florida, now 68, formerly of 127 Summer Street, wasn't too well satisfied with the security of banks and decided to have a 'little change' left no matter

what happened, so he filled three quart preserve jars with coins and buried them in the Fells in the rear of the Dutton estate in real pirate fashion. With a small hand trowel he visited the spot yesterday, recovered his money and deposited it in a bank today." (A Boston paper gives the amount as \$500.) "Miner came to town a few days ago and took a room at 50 Madison Street. He came on family business, but brought along the sketch he had made of the terrain in the Fells, where he had deposited his coins nine years ago. Miner told the *News* man today that he had not told anyone of the hidden treasure but knew that he would return some day to recover it. With a sketch made at the time, he placed the deposit beneath three giant oak trees.

"Miner arrived on Jerry Jingle Rd. from the Melrose end and to his surprise found the area somewhat changed, what with the road widened, and he was nearly an hour finding the three oak trees which appeared on his pencil sketch, which he has carried thru the years in his billfold. After locating the spot, Miner said today in less than 20 minutes he had his treasure. . . . This morning he appeared at the *News* office insisting that he didn't want any publicity on the matter and asked that the matter be entirely forgotten. He was overjoyed that no one had located the money and after a lengthy discussion with the *News* writers, he relented and decided the story could be told. Miner is a graduate of Malden High . . . and in his younger days was an architect. He was employed as an architectural supervisor for the Boston Elevated for some years and in World War One took a defense job at the Brooklyn Navy Yard and remained there for 17 years. He has been retired since that time. He is the son of the late Franklin M. Miner, who was a well known civil engineer and owner of considerable real estate in the west end. Concluding his business here Miner intends to return to Orlando, to spend the remainder of his days, but says he will always feel that Malden is his home and will occasionally visit here."

On February 27 our classmate, Clarence D. Howe, Canadian Minister of Trade and Commerce, spoke at the Chicago Club in Chicago on Canadian resources and his government's co-operation with the United States in mutual defense plans. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass., PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

• 1909 •

The last news from Paul is most encouraging. His sister, Mrs. Fairbrother, reports that he is better and that as the weather becomes warmer he will be able to sit out on the lawn and go for rides, and should feel stronger as a result. He misses his friends a great deal and simply "devours" The Review. His sister says: "Anything about M.I.T. is dearest to his heart, I really believe."

We have already reported that Johnny Davis, II, had taken up painting as an avocation. Recently, at the annual exhibition by the Business Men's Art Club of

Boston, his painting "Meeting by the Lake" was on exhibit at the Paine Furniture Company store. In addition, his painting "Hingham Church" was exhibited by the Cambridge Art Association at Harvard Square.

We have just received, very belatedly, the notice of the death of Arthur M. Rosenblatt. Rosie, as we called him in Course VI, died at Charleston, W.Va., on April 15, 1950, after an illness of six months. He was born in Oskaloosa, Iowa, on December 18, 1888, and prepared for the Institute at the Armour Scientific Academy and the Armour Institute of Technology. After graduation from the Institute, he was employed as an engineer for H. M. Bylesby Company until 1913, then by the Virginian Power Company as construction engineer. He served with the Corps of Engineers in World War I and retired with the rank of major. After leaving the Army, he founded the Engineering Service Company at Charleston, W.Va., and designed and constructed extensive power distribution systems. About 1925, he and J. B. Hunt formed a partnership of Rosenblatt and Hunt. The firm constructed many of the large high-tension lines for mining companies in southern West Virginia as well as doing practically all the electrical work in the vicinity of Charleston. Upon the death of Mr. Hunt, the name of the company was changed to Rosenblatt and Kerstein, Inc., and is continuing in this name. Arthur's wife, Anna Lee, although apparently in good health, passed away in August, 1950, after devotedly attending Arthur throughout his illness. He was a widely-known business and civic leader, a member of the Virginia Street Temple, of Kanawha Lodge AF and AM, Scottish Rite Masons, Beni Kedem Shrine, American Legion Post 30, Elks Lodge 202, and the Charleston Lions Club. There survives a sister, Mrs. Joseph K. Straus of Jamaica, Long Island, N.Y. — PAUL M. WISWALL, *Secretary*, 20216 Briarcliff Road, Detroit 21, Mich. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 366 Madison Avenue, New York 17, N.Y.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

• 1910 •

It is with deep regret that I have to announce the passing of three of our classmates. Patricia J. Scofield wrote as of March 31 that her father, Walter W. Scofield, died on March 25. "He had been failing for several months now and although he wasn't bedridden he felt quite miserable. Early Sunday morning he suffered a heart attack and died about 10:00 P.M."

Henry Schumann-Heink passed away on March 28 and the following is from the Boston *Traveler*: "Henry Schumann-Heink, 64, son of the late opera singer, died last night in Wadsworth General Hospital at the Veterans' Administration Center. Mr. Schumann-Heink was admitted to the hospital March 8 for treatment of cancer. He was the eldest son of Mme. Ernestine Schumann-Heink, the famed singer who died in 1936 at the age of 75. Mr. Schumann-Heink, a salesman,

was born in Hamburg, came to this country in his youth and was graduated from . . . Technology. He served as an ensign in the U. S. Navy in World War I."

Alice Willoughby passed away on March 8 and the following is from the Watertown, Mass., *Sun*: "Alice Stanwood Willoughby, 27 Maple Street, Lexington, art teacher 38 years at Cambridge High and Latin School, died . . . at Peter Bent Brigham Hospital, after a brief illness. Miss Willoughby, formerly of Watertown, was a graduate of Massachusetts Normal Art School and had completed a special course in architecture at M.I.T. She was a member of the Wedgwood Club of Boston, Boston Fan Guild, Watertown Antiques Club, Lexington Historical Society, and the Society for the Preservation of New England Antiquities."

Bob Burnett dropped in to see me a few days ago. Bob has been retired from the New England Electric System. He finds inactivity rather boring after a life of activity and intends to find something to keep him busy. J. T. Whitney is now on a trip to Europe with his wife and intends to visit the various places at which he was stationed during World War II. — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston, Mass.

• 1911 •

These notes may appear in the June issue practically coincidentally with our June 8-10 forty-year reunion. Since the last notes, we've heard from Johnny Scoville, Manhattan architectural engineer, that he and his wife plan to attend; but Bill Goodhue, I, Boston, and C. R. Stover, VI, Chicago, send regrets. This makes 159 dues-payers, with 50 classmates, for 86 attendees, saying chances are excellent; 59, totalling 87, fair; and 50, chances poor. Looks like a big party!

With deep regret we must announce the death of Houghton H. Whithed, VI; Ewazo Suzuki, X, and Mrs. Estelle Peabody Parker, widow of our First Marshal at graduation, Ted Parker, I, who died in April, 1944.

Whit Whithed, a native of Great Falls, N.D., prepared for M.I.T. at Phillips Exeter Academy. He was a member of the Electrical Engineering Society and the Exeter Club, doing his thesis with George Cummings, VI, veteran New England Telephone and Telegraph Company Bostonian. "I am not sure, in the confusion of mind attendant upon a bereavement," wrote Mrs. Vera M. Whithed in late March, "whether I notified you of my husband's passing on December 5, 1950. Whit had had a serious heart condition for two years before he left us, but had been much better and able to do many things which contributed to his enjoyment of life for some months prior to his going. He went instantaneously with no suffering, I am glad to say. He often spoke of Dennie and of your loyalty to 1911 over many years. Owing to our distance from M.I.T., he was unable to attend the class reunions." Whit had been credit manager for many years of the Puget Sound Light and Power Company in Seattle.

Word came promptly from Miss Mitsuko Suzuki, Shioya Tarumiki, Kobe, Japan: "Your letter, the class newspaper and roster, arrived April 12. However, I

am sorry to inform you that my father died a week ago. He had been suffering from cancer in his neck for about a year and a half. He was operated on twice last year, in January and May, and got radium treatment last October. Then he became much better, but he gradually became weak from the beginning of this year and at last died on April 4. He had wished to go to your country and meet the members of the Class—he told me so very often. I think if he could have seen your letter and this class roster, he would have been glad." Suzuki, a native of Kobe, Japan, prepared for M.I.T. at Central College in Fayette, Mo. While with us, he was a guiding spirit in the Cosmopolitan Club, serving as vice-president during the senior year. He was also a member of the Chemical Society and the Mechanical Engineering Society. Soon after his return to his native Japan, he became a life member of the M.I.T. Alumni Association. He was a well-known industrialist there in Kobe, having for years headed the Taiyo Soda Company.

Estelle Parker, Ted Parker's widow, died on April 4 at her home, 316 Washington Street, Wellesley Hills, after an illness of several months. She attended the Wellesley schools and the New England Conservatory of Music. In recent years, she had been engaged in the real estate business in Wellesley. A daughter, Mrs. Hilton Jayne, and a son, Franklin P. Parker, M.I.T. '36, survive. Frank, a construction engineer with Charles T. Main, Inc., Boston, wrote: "I've never gotten used to the idea of Dad being gone—he died while I was in India—and I know this will be difficult, also. I've been planning on going to my 15th reunion this June. Your 40th should really be an occasion! My wife and I have four children, all of whom will be in school this fall, and my sister has two. One of my children is named Theodore, for his grandfather, and you might keep an eye out for him in eight or nine years."

In last month's notes we announced hearing of the death on February 9 of Willson Y. Stamper, I, with no details then available. While an undergraduate, he was an active member of the Civil Engineering Society, pulled on the class tug-of-war team and was class secretary in his freshman year; while in his second and third years, he was a member of the Tech Show chorus. A fine tribute to Stamper appears in the April issue of *Storage Battery Power*, house organ of Thomas A. Edison, Inc., Newark, N.J.: "Willson Y. Stamper, design engineer of the Edison Storage Battery Division of Thomas A. Edison, Inc., and head of both the general engineering and mine lamp sections of the engineering department, died February 9 in Presbyterian Hospital, Newark, after a short illness. Mr. Stamper was born in New York City in 1890 and received his early education there. . . . He enlisted in the U. S. Army Corps of Engineers. He served with the AEF in Europe during World War I and retired from the Army in 1927, at which time he was captain in the Eleventh Engineers."

"In April of that year, Mr. Stamper joined the Edison Industries, where his exceptional ability in engineering re-

search and development brought him steady advancement. One of his earliest accomplishments was the standardization of trays for the assembly of cells in the course of which he increased the mechanical strength of the trays substantially relative to their weight and developed specifications as well as jigs and fixtures for quantity production. Later he similarly developed standard designs and specifications for the manufacture of steel cradles and demountable steel boxes for the assembly of batteries as complete units for ease in exchanging them in industrial trucks, locomotives and shuttle cars, which operate more than one shift per 24-hour day.

"He traveled extensively, visiting battery installations both in this country and abroad, in order to learn at first hand the practical conditions of operation. The knowledge he thus acquired was among the reasons for the final success of his development work. His most outstanding recent accomplishments lie in his improvements in the Edison miners' safety electric cap-lamp. He was placed in charge of mine-lamp development in 1940, since which time he introduced and field-tested numerous radical changes in design culminating in the R-4 model, which was placed on the market in 1948 and affords approximately 25 per cent more light output than earlier models. In 1948 and 1949 he assisted in the development and installation of special machines for manufacture of miners' cap-lamps in a new plant then being established and now in operation in Scotland. He is survived by his wife, the former Hazel Fuller; a daughter, Madeline Stamper; and two brothers, Hamilton and Furman Stamper."

From the executive offices of the Boston Edison Company came word that Thomas H. Haines, II, of Weston, had been appointed vice-president and associate director of engineering, steam and electric operations. Upon graduation with us in 1911, Tom spent two years at M.I.T. as an assistant and later an instructor in the Mechanical Engineering laboratories, leaving there to go with Boston Edison in mid-1913. For many years he had been superintendent of the transmission and distribution department, in recent years having been an assistant vice-president and staff assistant to the director of engineering, steam and electric operations. Hearty congratulations, Tom, and best wishes for a continued improvement in Mildred's health, so that you both can be with us in June at Harwichport.

John Taylor Arms, IV, gave a demonstration of etching at the Olin Memorial Library of Wesleyan University in Middletown, Conn., in the late spring. A graduate of Princeton University, John received his S.B. with us in 1911, his S.M. in 1912, and since then has received an honorary degree from Wesleyan. He has made a remarkable record in the field of etching, many of his works being in permanent exhibitions in many parts of the world. He has been the recipient of many prizes for his etching, among them awards from the American Institute of Fine Arts and the Society of American Etchers. His home and studio are at Greenfield Hill in Fairfield, Conn.

Had a fine letter recently from Oliver D. Powell, XI, writing from Glendale, Calif.: "I recently had a letter from Howard Ireland's wife saying that they and the Ralph Bierers were considering going to the Cape in June and urging the wife and me to join them. We would most certainly like to be with you all, but it now looks as though Dorothy and our daughter, Louise, will be going to Europe in early July for a few weeks and early June is too early to make the trip east. Besides, I am tied to my work in charge of the management engineering section of the planning division of the Navy Supply at the U.S.M.C. Air Station at El Toro (near Santa Ana).

"The investment I made in a shoe manufacturing company in Pomona with high hopes, but a little foreboding, had a very unhappy ending. We didn't have a majority stock control. After that, and until I went with the Navy, I laid low. It is eight years this week (first week in April) since I came to California to live." Howard Ireland, XI, and Ralph Bierer, I, whom O.D. referred to, are both veteran shoe manufacturers in Auburn, N.Y.

A mid-April letter from Bert Fryer, VI, says that "if able to get anybody to stay on the ranch to take care of my father, we are planning to take in the reunion, but do not want to make any reservation at this time." Writing from Carnation, Wash., with "Lumber Drying Engineer; Design, Construction, Operation" on the letterhead, Bert continues: "Seven years ago, as you know, I moved out on a 40-acre ranch here with the idea of retiring, but that lasted only a couple of years and I've been back in engineering ever since, with offices in Vancouver, B.C., and Chico, Calif., where I am also interested in a commercial drying plant. My son, Eric, is factory manager of the American Can Company plant at Portland, Ore., while my daughter and her husband train horses in Southern California.

"This year we are having quite a labor problem on the ranch on account of the preparedness program and inasmuch as we raise strawberries, this crop comes in about June 1 and I may have to pay some attention to this. We have approximately 25 acres in berries and also about 12 acres in rotation on a bulb crop so as to have a little diversity; and, of course, we have the odd number of cattle so we can overcome the high cost of beef. This about covers the *status quo* and if any of the Class happen to be out in this neck of the woods, we certainly would enjoy having a call from them so as to renew some of our old contacts." Surely hope you can make the reunion, Bert.

Don Stevens' retirement as executive vice-president after 30 years of managing the Okonite factory operations was announced in the April notes. The magazine, *Electrical World*, contains one fact that we neglected to mention in tracing our class president's earlier career: "Stevens worked for Goodyear Tire & Rubber Co. and Peerless Motor Car Co. before joining Okonite as plant superintendent in 1921." Don is continuing as a director of Okonite, although retired.

Bob Haslam, X, has added another directorate to his string, news of which was recorded in the North Adams, Mass.,

Transcript, thus: "A North Adams native, who retired a year ago as vice-president of the Standard Oil Co. of New Jersey, was elected a director of the American Gas & Electric Co. yesterday (March 27) in New York. He is Robert T. Haslam, who was born here on April 3, 1888, worked his way through M.I.T. and helped develop present-day methods of oil refining. . . . He taught at M.I.T. for a time after his graduation, and after eight years with National Carbon Co., he returned to the institute as professor of chemical engineering and director of the applied chemistry research laboratory. He joined the Standard Oil Co. of New Jersey in 1927 as one of a group of technicians pioneering in the field of petroleum synthesis and later became, successively, sales engineer, general sales marketer and then director and vice-president. He is an alumni term member of the M.I.T. Corporation and is president of the United States Pipe Line Co. and a director of the Ethyl Corporation and the Worthington Pump & Machinery Corporation."

John Alter, IV, reports from Lawrence that his firm, Pearson, Alter and James, architects and engineers, continues to be very busy. He and his partners — Thomas J. Pearson and Horace H. James — have been together since 1945. John is planning to get to the reunion, barring complications. — From Ventura, Calif., Stacy Bates, II, of the law firm of Sheridan, Orr, Bates and Barnes, writes: "Much as I regret it, I am not going to be able to make the reunion this year. Mrs. Bates and I have been getting back to Maine for a number of weeks for the last several years and expect to go again this year, but not until the latter part of August; and much as I would like to put our trip forward, so that we could take in the reunion, I am afraid it is out of the question. My best wishes to all the members of the Class for a very happy and successful reunion."

— Definitely registering for the affair, George Cumings, VI, writes from Boston: "Can't say what activities I will take part in; am too decrepit for tennis and am still subject to seasickness, but I'll be there!"

Just "caught" this excerpt from columnist Frank Farrell's "New York Day by Day" in the *Gardner News*: "FORWARD PASSES — To President Truman: 'The MacArthur I Know' by four-star Gen. George C. Kenney (I) is being rushed for June publication by Duell, Sloan & Pierce. Here's potential candor I can't wait to read. Kenney, as blunt, hard-hitting air chief for MacArthur's war in the Pacific, had a unique view of his subject. As he once declared to me in New Guinea: 'Those who know Mac, or who think they do, either love him or hate him, but they're never neutral.' Bring a copy to the reunion with you, George. We're all looking forward to seeing you and Alice again."

Here, at this writing, are the actual registrants for the reunion, in the order of receipt: Sara and Dennie, Warren and Mrs. Simonds, M. E., and Mrs. Comstock, Hal and Mrs. Jenks, Jim Duffy and Jim, Jr., Joe and Mrs. French, Stan and Mrs. Hartshorn, John and Mrs. Herlihy, Walter and Mrs. Welch, Harry and Mrs. Tisdale, Minot Dennett, George Cumings, Royal

and Mrs. Barton, Henry and Mrs. Wood, Jim and Mrs. Campbell, Phil and Mrs. Caldwell, Ralph Runels, Don and Mrs. Stevens, Henry Dolliver, Bob and Mrs. Morse and daughter Peggy, O. W. and Mrs. Stewart, Joe and Mrs. Harrington, Gordon and Mrs. Wilkes, John and Mrs. Scoville, L. G., and Mrs. Fitzherbert, Obie and Mrs. Clark, Harold and Mrs. Robinson, Phil and Mrs. Kerr, Syd and Mrs. Alling, Louis J., and Mrs. Harrigan, Chairman and Mrs. Aleck Yereance, Norman and Mrs. Duffett, totaling 61.

Address changes: John L. Bagg, V, 29 Chestnut Hill, Greenfield, Mass., recently retired as president of Millers Falls Paper Company; and Roy D. Van Alstine, I, 3916 Myrtle Avenue, Long Beach 7, Calif.

One final bit of advice: If you haven't thought you could attend the reunion and suddenly find you can, drop everything and join us at Snow Inn, Harwichport-on-Cape-Cod, during the second week end in June! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

Jim Cook has recently been made president of the Lynn Gas and Electric Company. Jim started with them in 1925 as superintendent in the electrical department and worked up to general manager in 1934. He became director in 1938 and vice-president in 1949. The *Lynn Telegram-News* has this to say: "A leader in the utilities field for many years, he has served as president of the New England Gas Association and other professional groups. His activities have included service as president of the Chamber of Commerce and as a leader in Community Fund and Lynn hospital affairs. He resides at Trinity Road, Marblehead."

As you all realize, our 40th reunion comes up in just a year; and to get things under way, the Davis boys, Albion and Ernest, have been persuaded to head the committee. If you have any ideas as to time, location or amusements, won't you write either to Albion R. Davis, 11 Vane Street, Wellesley, Mass., or to Ernest W. Davis, care of Simplex Wire and Cable Company, 79 Sidney Street, Cambridge? We should all make every effort to get back next year as it looks like a big gathering. — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass. LESTER M. WHITE, *Assistant Secretary*, 4520 Lewiston Road, Niagara Falls, N.Y.

• 1914 •

Word has been received that Thorn Dickinson has kept on moving east from his previous assignment in San Francisco as project engineer for Stone and Webster, and after a brief stay in New York, has departed for Izmit, Turkey, which is not far from Istanbul, but on the opposite side of the Bosphorus. It is assumed that he is on a new engineering construction project.

Squire Roy E. Hardy is in the political arena again. Roy has been doing so well in Andover, Mass., affairs that no one will run in opposition to him. He was the unopposed candidate for a three-year re-

election to the position of selectman and assessor. Roy still keeps up his long list of civic activities, such as Red Cross director, Youth Center, School Building Committee, Community Chest, bank director, and a host of other useful community positions.

Charlie Fiske has been trying to arrange a meeting for a New York Fourteen Dinner. Conflicts with other Technology affairs seem to have made this very difficult, and as this is being written it begins to look like a fall postponement. — On a recent trip to New York, your Secretary chanced upon John Giffels in a noontime restaurant. Gif was as buoyant as always and hoped that a spring dinner could be arranged. — H. B. RICHMOND, *Secretary*, 275 Massachusetts Avenue, Cambridge 39, Mass. ROSS H. DICKSON, *Assistant Secretary*, 126 Morristown Road, Elizabeth, N.J.

• 1915 •

Our sincere wishes to the grand Class of 1916 for a successful reunion — their biggest and their best. — In a beautifully printed and bound volume, *Able Men of Boston*, the Boston Manufacturers Mutual Fire Insurance Company reviews its 100-year history, 1850-1950, with a glowing tribute to our own Marshall B. Dalton, its president since 1934. Jack is the youngest man to hold this office in the company's full century of business. Our compliments to Jack on his splendid achievement in this important position. — In October, 1951, we get going once more with the Alumni Fund. When it comes your turn, give generously to keep 1915's record intact and keep 1915 right up there with generous contributions.

Max Woythaler's son, Joseph William, was married to Walterlyn Cozine Vanderveer on January 27 and Louie Young's son, Paul Louis, was married to Mar Jorie Catherine Burke on March 31.

Many nice letters have been received concerning Jac Sindler's "loot" present and Wally and Parry's colored pictures from the reunion. Jack Dalton: "Thanks very much for the reunion picture. It brings back memories of a grand occasion." Herb Anderson: (back from South America) "I certainly received a pleasant surprise last night when I came home and found the photochrome print as a reminder of Cape Cod. I think that the serious figure in the background must be Ed Whiting." Alton Cook: "I recently received the Kodachrome print of myself and a fellow traveler who appears to be Tower Piza in profile. Please extend my thanks to Parry Keller and Wally Pike for this picture. I don't seem to remember when it was taken but certainly do remember the occasion, and *how!* I also wish to thank whoever was responsible for sending two items, a plastic dish with M.I.T. seal and a small carborundum in a leather case. Here's hoping we will have several more reunions as grand as the 35th!"

Sol Schneider: "Thanks for the Kodachrome print you sent to me. It is wonderful showing not only myself, but Ed Whiting and our late classmate, Tom Huff, on the golf course at Coonamessett Inn. Ed told me, when I saw him at the M.I.T. Philadelphia Club dinner, that he and

Andy went to the funeral for poor Tom and sent flowers in the name of the Class. Very thoughtful of them. I also saw Larry Bailey at the dinner and mentioned that you and the Boss of your household may pay us a visit this spring and the boys in this vicinity will be rounded up for a get-together. He said that he will try and make it. So, let Andy, Ed or myself know what your plans are and I am sure we shall make it a good party."

Bill Spencer: "In addition to the supplemental 'gifts' received in consideration of having attended our fine 1950 reunion, I recently received three enlarged color prints showing me how I appeared as a visiting fireman. I am glad I was able to get away to enjoy the reunion for since then it has been one thing after another."

"The national emergency has required much of the resources of Consolidated Engineering Company as we had to rush to completion the new roofs and interior work on the House and Senate wings of the Capitol at Washington and move that organization greatly enlarged to Bainbridge to rehabilitate and reactivate that Naval Training Center. It had been abandoned for five years with war assets disposing of all that could be sold and moved out. There are now about 5,000 Naval personnel back there with over 25,000 more expected by the middle of the year. We have a number of other large projects in various stages of completion and hence our forces are quite busy. We are proud of the reputation and position we hold in the construction industry and do all we can to keep ourselves free of all suspicions. I learned through the class notes of Tom Huff's death and it struck me a heavy blow. He was my best man when Ethel and I were married. He lived in Baltimore for a few years during the early part of the last war and I saw quite a good deal of him. He had a splendid character and was a fine man. I have had no personal contacts with classmates this year."

On March 20 John Dalton was awarded a patent on "Resin Treatment of Wool Fabrics." This was in collaboration with William B. Kaupin, an associate of John's at Pacific Mills, Lawrence, Mass., where John is director of the chemical department. Bill Brackett has been laid up in the New England Baptist Hospital, Boston, where they've done a good job of keeping him quiet and making him behave.

Good old Speed Swift is returning to the Mary Hitchcock Hospital, Hanover, N.H., for a cataract removal. A former similar operation last year was most successful for Herb. We wish both these classmates, Bill and Speed, a complete and successful recovery.

After having made a valiant recovery from his recent operation, Gene Place is having a tough time again. He's had to return to the hospital and is critically ill with jaundice. May he make a satisfactory recovery, and soon.

These nomadic '15 men do get around. Imagine Max and Catherine Woythaler, Ben and Loretta Neal, and Virginia Thomas all meeting at Williamsburg, Va. Max wrote: "We are just finishing lunch here with Virginia Thomas. We met the Neals at dinner last night." And then from

Virginia: "We have seen Max and Catharine Woythaler several times and went on a carriage ride with the Neals." We'd like to have been there with them. Eventually we expect to hear from Ben Neal — we do hope!

And now for an odd 1915 coincidence. During the winter we talked with Wally and Ardelle Pike and at another time with Vince and Marion Maconi about a Bermuda trip. Mind you, these were wholly independent of each other with neither the Pikes nor the Maconis knowing that the other was planning to go. At any rate, we thought the Maconis had dropped the plan. Imagine, therefore, our pleasant surprise to get a card from Vince and Marion needling us about going with them on the trip. Then the Pikes' card rubbed it in with "having a fine time — wish you were here." And these four wonderful letters from them telling how they got together.

From Marion, "As the slang expression goes, 'I almost dropped my front teeth' when Mac said, 'For goodness sake there is an old classmate of mine.' You guessed it, Wally and Ardelle Pike. Just as Bermuda was fast fading from us, we met them on the Queen deck. We both regret we couldn't have met earlier and done a little extra Bermuda sightseeing together. I think it strange that we didn't meet them on the streets somewhere in Hamilton, where we met three or four other friends and acquaintances. I'm really getting impressed with this 1915 Class. The more of them I meet, the better it gets, and I'm looking forward to the next mixed reunion. I think of our pleasant football week end last fall and hope nothing will prevent our getting together in New Haven for football this fall, or earlier (on most any pretext). I like Wally and Ardelle so much and am glad to add them to the list of Boston friends."

From Ardelle: "Last night we played Canasta and Marion and I won the game, which pleased us very much. Think you folks and Barbara Thomas should have been with us our last night in Bermuda — at the Angels' Grotto — a very enjoyable evening with five other congenial people." From Vince: "Thank goodness I have completed the declaration form for the Customs inspector. I thought our trip to Bermuda would be a vacation, instead it was a shopping trip. Among the four- or five-dozen articles I listed were about a dozen kinds of perfume. You ought to come to 63 Brookside Drive for the grand opening. In addition to the bottled perfume we have four exquisite Bermuda onions — what clash! M.I.T. had a rugby team in Bermuda and I saw them lose to Dartmouth 3-0. Yale won the tournaments — Princeton was second. Dartmouth and Harvard were also rans. Start making your plans for the fall reunion." From Wally: "There were three Tech boys at our guest house when we arrived and another came the day we left. Ardelle had to learn all over again how to ride a bicycle and I took her picture to prove she can ride now. We spent the day (and our money) at the race tracks."

We missed this trip with these Course I tycoons by a very small margin — very close — just a matter of about a thousand dollars. I guess they really make it in Course I. Aggravating as all these cruise

and trip reminders are — they all "help Azel." — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

• 1916 •

Here are a few of the replies that we received from those who, at the time of this writing, were not going to be able to make the reunion. Frank Bucknam wrote: "Very sorry that I cannot be with you. I will be east the first of May for a few days. You are doing a fine job as secretary." Vannevar Bush: "It now looks as though I would be in France at that time." Professor John Fairfield: "I doubt if I can attend the reunion as that is the time of graduation with us." Ernie Gagnon: "I cannot attend — reason, Lima, Peru, too far away." Ed Hewins: "Sorry can't make it, but I have already taken my 1951 vacation in Florida." Ed Jenkins: "Sorry, it is such a long way. Drove east last fall and visited Bucknam and Hubbard. Regards to '16." Stew Keith: "Sorry, but am way out in Missouri helping to build a steam electric station." Al Pettee: "Sorry, Yale class reunion nearly conflicts." Bill Willems from Los Angeles, Calif.: "Best wishes for a grand party." Willard Brown: "I wouldn't miss the 35th reunion for anything! But it looks like I am going to. You see, the triannual meeting of the International Commission on Illumination meets in Stockholm this June. Not only do I happen to be vice-president of the United States National Committee of this international lighting organization, but I am also chairman of its secretariat on lighting practice and, therefore, I am busily preparing and will have to deliver a report on lighting practice covering the various countries of the world. Mrs. Brown and I sail on the *Nieuw Amsterdam* on June 8, the very day the reunion gets under way. So there I am . . . unless 'Uncle Joe' does something to upset the trip abroad. After the last two reunions I have felt that nothing short of international complications or a broken leg would keep me away. Now the former has come up to bite me. The best I can do will be a toast to the Class as we sail out past the Statue of Liberty, which I will surely do."

Bob Miller: "I certainly would very greatly enjoy being at the reunion, but unfortunately my 40th reunion at New Haven occurs in that same area of time, and I cannot afford the amount of time necessary to attend both reunions. Nonetheless, I sincerely hope that the whole party from June 8 through June 11 may be most successful and that everyone will have a grand time." Elmer Wanamaker: "I wish it were possible to attend the reunion, but am afraid it will not work out. My job has taken just about all available time, particularly since speeding up of the rearmament program. In common with most metals there has been a greatly stimulated demand for the pure electrolytic manganese which we produce and plant expansions are becoming almost routine." Leslie Bartlett: "At the moment, of course, I don't know whether I shall be able to be there with the Class for the 35th reunion. I think that I have been to only one since leaving M.I.T. I will really make a real attempt to do so this year."

Hopping into our other correspondence now, we received this letter from Paul Austin: "This is to acknowledge your letters of September 18, 1950 and March 7, 1951. The first letter was addressed to me at Dhahran, Saudi Arabia, and I received it after my return to the States on February 6, 1951. Before I left Homs, Syria, where I was last located, I drafted a letter to you, telling about my 27-month sojourn in the Middle East. I have been pretty busy since my return, but I promise I will get the letter out in the near future, edit it, and add something about the three-week trip through Europe I took on my way home." That should prove to be a very interesting letter, Paul, and we will be looking forward to receiving it.

Charlie Paugh sent us this one a short while ago: "I liked your recently suggested title for a book, 'How to Retire Before You Have To,' as I have been long so inclined and planning the eventual arrival of what I think should be a pleasant event. In preparation for it, we already have a summer home on an island in Canada and we are looking forward to a winter place in Florida. If we get a new Cadillac, now on order for six months, we may take a trip down there this spring. Present and prospective shortage of engineers seems likely to affect such plans. The recently published list of Tech men having sons and daughters now entering was interesting, particularly as our daughter will be out of high school in a couple of years; but as she is more inclined to art than to science, she is planning on the University of Miami (Fla.). The only professional item I think of interest to report is that I just recently attained the grade of Life Fellow in the American Society of Mechanical Engineers which only again reminds us that time moves on." Charlie later wrote that he would not be able to be at the reunion. We tried to influence him along the lines that he should try to be present and even suggested that the drive from Maryland to the Cape would be a wonderful opportunity to break-in the new Cadillac.

We received this interesting letter from Hovey Freeman: "I have your notice about the 35th reunion and am planning to attend the first two days but will have to leave then in order to get to the graduation of my youngest daughter from Smith College for Sunday and Monday. Here's wishing you every success in getting a big turnout. You are doing an excellent job with the class notes. I have just returned from a quick business trip to Florida and then a week's vacation in Nassau with my oldest son who has a beautiful home there. Marjorie and I flew up from Nassau in a Boeing Stratocruiser in four hours, nonstop to New York. Since I wrote you some two or three years ago, I have given up the vice-chairmanship of the Plan Commission of the city of Providence because as the lone Republican among six Democrats I just couldn't take the politics; and somehow, an engineer and politics don't mix. I have also taken on the presidency of the Rhode Island Public Expenditure Counsel which tries to watch and advise the state and local cities and towns regarding taxation and

public expenditures. Our business, as the result, of course, of inflated values, is booming. We now have almost 11 billion dollars in force in the company which I head so you can imagine it keeps me somewhat busy."

Herb Mendelson brings us up to date with this one: "Until now, I really had very little news to impart. However, this has been altered by the engagement of my daughter, Ann Louise, to Arne Groningsater of this city. Arne has taught English at Lawrenceville School and is now getting his Ph.D. here at Columbia University. The movie, 'Father of the Bride,' adequately depicts my position. Being a potential grandfather, I have aged rapidly the last few days. Ann expects to be married on May 12 and after that I guess we all will have to go into hibernation in order to recuperate. We have just returned from several weeks' fishing in Florida where we were joined by my daughter and my son, Peter, who received a nine-day furlough from the Army. I am now back on the job again in New York and, if all goes well, I shall be up at the reunion. I haven't seen any of the New York boys in quite a while but I did run into Stew Rowlett at an M.I.T. club gathering. He looks exactly the same as the day he was graduated. He refused to divulge the cause or source of his youthful appearance."

From the Dean of Law School, University of Michigan, E. Blythe Stason, we have the following: "I have retrogressed so far that I seldom, if ever, see an engineer, and it has been many, many years since I have seen a 1916 M.I.T. engineer. Furthermore, the life of the dean of a large state university law school is not exactly lacking in time-consuming activities, and especially is that true at and about commencement time. Accordingly, it is going to be quite impossible for me to get away from Ann Arbor to attend the 35th reunion next June. This I sincerely regret." Sorry you couldn't be with us this time, E. B. Perhaps we can bring it to you in the printed word in our column for *The Review* in November of this year.

Again, we hear from George Petit with a good bit of information and sound bit of philosophy: "When you hear of 'operations this and that,' symbolic logic and all the new subjects at Technology, perhaps we should all go back. We are sadly out of date. It may be a good idea when we retire from business to go back to school rather than deteriorate in a Florida mirage. With my years in World War B.C., in the construction business, then as manager of a Wall Street branch brokerage house and finally with the Travelers Insurance Company, I feel as though the field has been pretty well covered. Every bit of it has been enjoyed immensely. Outside of business I have as hobbies my 11-year-old boy, treasurer of a church fund and, oh! yes, writing a book. It is to be, if I can finish it, a dissertation on the phenomenon of price movements in security and commodity markets. For want of a better title it is called, 'What Direction the Trend - An Answer.' It will also contain a chapter designed for the use of insurance executives relative to administrative problems. It will be good to meet again at our reunion. I think it is more

important than ever that all, who can, should come. After all, outside of our families, what is left? The dollar doesn't buy anything anymore." Just for a minute, let's linger on the last few sentences of George's letter. They carry a sentiment which others have expressed on numerous occasions and one which your secretaries have been trying to promote for a long time. It isn't possible for most of us to see each other, except at reunions or other special functions. For this reason, we have concentrated our efforts on the second best medium of contact, *The Review*. Through the class column, we have tried to keep everyone abreast of the current activities of his fellow classmates. Luckily, we have a very co-operative group and our job has been made easy; but it can be made easier, and the results much more enjoyable. Instead of waiting until we hear from one of the class secretaries looking for news, why couldn't each one of us make it a point to write one letter a year, if you can write more often so much the better, but one letter a year to let the gang know what we have been thinking or doing over the preceding 12 months? Some of us might think that that we would have to say would not be too exciting, but what we fail to realize is that there are many others in the Class who would be happy to hear, if nothing else, only that we were in good health. Think it over . . . one letter a year, 15 minutes, or at the most one-half hour a year.

At the last luncheon meeting in Boston, Paul Duff, Tom Berrigan, Karl Engstrom and Izzy Richmond had a very enjoyable couple of hours reminiscing on past reunions and the days of long, long ago at Technology. Paul's children, 10 of them, have grown up fast and one son is now attending Notre Dame, another is at Boston College, while a third son graduated from Boston College within the last two years, and is now in medical school. One of Paul's sons and one of his daughters announced their engagements on the same day a short while ago. Paul looked very good and was very enthusiastic about the 35th reunion. Izzy Richmond told of his recent experiences flying over the local countryside, viewing the progress on the different projects that his organization designed and which recently got underway. Izzy has had his private flying license for some time and is now pushing for his commercial license. Karl Engstrom seemed to get quite a kick from talking about the 30th reunion and took the occasion to thank Paul Duff again for helping him to get home after that one. Tom Berrigan, looking as athletic as ever even without the hair, promised plenty of activity along the sports lines for those that wanted it at the reunion and emphasized the fact that there would be liquid "boosters" positioned strategically to give that little "extra" to help those that needed it to get over the hump. Your Secretary regretted very much that he was unable to get to this luncheon but he was over in Switzerland at the time and couldn't quite make it. The trip was for business purposes but some gentle skiing got mixed in somehow.

That's it for another month. Thanks for your letters. — RALPH A. FLETCHER, Sec-

retary, Post Office Box 71, West Chelmsford, Mass. HAROLD F. DODGE, Assistant Secretary, Bell Telephone Labs, Inc., 463 West Street, New York, N.Y.

• 1917 •

Word from Lobby advises that the M.I.T. Club of Puerto Rico has been established. It apparently went over in a big way — 32 of the 50-odd Alumni were present and enjoyed the C.F.D. film. Antonio S. Romero '12, Judge of the Puerto Rican Tax Court, is president and C. S. Canals '26, is secretary. Lobby was due back the end of April; we await with interest further news of his tour. — Wentworth-By-The-Sea is now definitely under consideration for our 35th reunion in 1952.

One of the members of the Class of '17 best known to the press-reading public in the Boston area was Anselmo Krigger. He died on February 11. The newspapers carried long and unusually favorable notices of his death and carried them outside the usual obituary columns. He was known not only in his own civil engineering field but as an athlete and a constructive leader in matters concerned with racial relations. It was not so long ago that he took public exception to some of Paul Robeson's statements about Russia and the implication that many others of his race shared this attitude.

Lou Perkins is now Rear Admiral Perkins and stationed in Honolulu. — Al Moody's newest address is Box 158, Malvern, Ark.

The latest news on Sully comes from I. B. McDaniel (of the Class of 1916!) in Covina, Calif.: "Biggest news is that Sully was here en route to Tokyo. He has all kinds of contracts in Japan and Formosa — wanted Kay and me to go with him but I like the outfit I'm with. George Henderson is going to join him later. Sully's wife and her sister will be our house guests next month — and then fly on to Tokyo. Sully has more funny and crazy stories than anyone I have ever known. Sunday we gave a dinner party for all of Sully's Chinese friends — among them was Ki Kee Chun (M.I.T. '20) who did the feather-kicking dance in Tech Show." — Al Lunn has been named a member of the board of directors of the Kendall Company.

Art Knight wrote recently: "I am getting ready to start on the annual spring cruise of the Sportsmen's Pilot Association. This organization was formed in 1935, is limited in membership to 200 members and their families, and includes only pilots who make a hobby and not a business of aviation. Spring and fall cruises have been the fashion for years, although they were suspended for several years during the war. The average age of the pilots is over 40.

"This year our cruise is to Phoenix, Ariz., where we loll around from April 15 to April 20, and then disperse in various and devious directions. As an extra attraction, one member residing in Keokuk, Iowa, has arranged a rendezvous there on April 13 for those who wish to stop en route. There is a sight-seeing tour by bus in the afternoon and in the evening a trip on the Mississippi on a chartered boat

with supper, music, and dancing. In the morning we leave Keokuk for El Paso, where a royal welcome awaits us, with entertainment across the border at Juárez in the evening. A Saturday night in April in Mexico ought to be something." — RAYMOND STEVENS, *Secretary*, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass. FREDERICK BERNARD, *Assistant Secretary*, 24 Federal Street, Boston 10, Mass.

• 1918 •

In the February cold, Lawrence H. Flett, better known to us as Mike, chairmaned the annual luncheon of the M.I.T. Alumni attending the annual convention of the Technical Association of the Pulp and Paper Industry. The 70 Alumni present at the luncheon enjoyed hearing from the guest speaker, J. E. Vivian '39, Associate Professor of Chemical Engineering at M.I.T. Dr. Vivian discussed the Institute's proposed educational program for the future. From dripping quill, Mike also carefully wrote in collaboration with two other men, a paper appearing in a sheet called *Soap, Perfumery, and Cosmetics* and published in London. In its "Personalities" column, said publication says: "Mr. Lawrence H. Flett, director of the New Products Division of the National Aniline subsidiary of the U. S. Allied Chemical and Dye Corporation, is a B.S. of . . . Technology, holder of more than 75 patents in the fields of surface-active agents, dye-stuffs and antiseptics, and a pioneer of synthetic detergent production in the U.S.A."

George S. Murray, from Milton, who started out with us as a member of the small band who elected Naval Architecture, is still a resident of Milton, where he long ago launched into politics. The Quincy *Patriot Ledger* is responsible for the following: "George S. Murray, who has held public office in Milton since 1927, and, who is a candidate for reelection as assessor, is being opposed by Theodore Perry, a World War II veteran. Mr. Murray served as assessor from 1927 to 1931; selectman from 1931 to 1934, and chairman of the board 1932-33; chairman of the board of appeals from 1932 to 1939 and assessor from 1939 to 1951. He was a lieutenant in World War I in naval aviation and designed the type propeller installed in the famous flying boat NC4, the first to cross the Atlantic ocean. During World War II he was with Murray and Tregurtha company, manufacturers of landing craft, and while with them designed the high horsepower out-board motor powering the Rhine beach landing ferry boats used in the invasion of Europe."

Rumor has it that F. Alexander Magoun made the hottest speech ever heard at the Ford Hall Forum. This does not refer to what he said at the Forum, but to the fact that he did it with a temperature of one hundred one and a half. So the old trooper thinks "the show must go on." — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

• 1919 •

Ray H. Bartlett was in New York a short time ago and called your Secretary.

Ray is now in Boston, vice-president of MacDonald Brothers, Inc., management engineers, and seems to be prosperous and happy in this location. — Had a nice long letter recently from Jack Fleckenstein, who is vice-president in charge of sales of the Crystal Refining Company, Carson City, Mich. His daughter, Joan, is now attending M.I.T. and has set her heart on becoming a field geologist in the petroleum industry. He expects to be in Philadelphia the first week in July.

A very interesting article appeared recently in the *Berkshire Courier*, Great Barrington, Mass., regarding our classmate, Morton A. Smith. He now operates a store in conjunction with Harold M. Finkle, who handles the sporting goods department, and Mort has the music and radio repair business. The latter is a native of Great Barrington, educated at the Bryant School, the Justin Dewey School and Searles High, where he played football for three years and four years of hockey. While at Searles, he became interested in a newfangled contraption that was making its way into everyday life. It was known as wireless. Mort was one of the first in town to fool around with the stuff and devoted his time strictly to this live-wire business. Back in those days, there were a few in town who were interested in this innovation and he and some of his pals used to get together and make up their wireless sets. After graduating from Searles, he entered M.I.T. and completed the four-year course in three years, for they had an accelerated program at that time due to World War I. After graduation, he was sent to Newport News, Va., to do Navy work as an electrical engineer. He stayed there three years and then returned to Great Barrington. Radio was still in its infancy and, after a year of taking care of the radio business for one of the local townsmen, he went into business for himself. He made a hit with the local basefall fans in the fall of 1922 when he gave the inning-to-inning account of the World Series that year. Since radio has always been paramount in his ambitions, his Utopia has since been reached in his thriving business and we all join in wishing Mort continued success.

A recent communication from classmate F. C. Spooner advises that he is in the clothing business which certainly keeps him "on the go." — We have the word that our classmate Alexis R. Wiren's *Office Workers Manual* handbook has now been adopted for use by General Motors, in a special edition entitled *Thought Starters*. He is now preparing a new, labor of love, booklet which currently he has entitled "Your Happiness and Your Job." — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 385 Madison Avenue, New York 17, N.Y.

• 1920 •

Bob Pender has been in the local lime-light recently in connection with the financial drive of the Lynn Young Men's Christian Association, for which Bob has served as a director for 24 years. He is a charter member and former president of the Y's Men's Club and one of the founders of the Y.M.C.A. group that sends food, clothing and toys each Christmas to

three hundred needy families. Bob is also a director of Lynn Hospital, has served several terms as director of the Lynn Chamber of Commerce, is a director of the North Shore Bank and Banking Company, a former president of Lynn Master Plumbers Association and of the Massachusetts Master Plumbers Association. He is vice-president of R. T. Pender, Inc., leading plumbing and heating firm in Lynn. He has a son associated with him in business and two daughters. Mrs. Pender died in 1949.

C. Richard Soderberg, Head of the Department of Mechanical Engineering at M.I.T., has just returned from Sweden where he was awarded the honorary degree of doctor of technology by the Chalmers Institute of Technology, one of Europe's most distinguished technical institutions, founded in 1830. — Ken Clark has been appointed vice-president of Johns-Manville Sales Corporation and merchandise manager of the company's building products division. Ken has been with Johns-Manville since 1934. He is a director of the Acoustical Material Association and member of the Producers Council, Inc. He plays golf at Mt. Kisco Country Club. Ken's daughter, Barbara, is now attending Colorado College.

Clint Bond, who is M.I.T. Honorary Secretary at Bombay, India, is with the Standard Vacuum Oil Company there. Larry Ropes is now living in Beverly, Mass., address 17 Brimbal Avenue. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

• 1921 •

Now is the time for all men of 1921 to come to the party — to paraphrase the Hunt and Peck quotation — our 30th reunion at the Sheldon House, Pine Orchard, Conn., on June 8, 9 and 10, followed by a trek to Cambridge for the June 11 Alumni Day events, featuring our annual class party at 5 o'clock that afternoon at the Copley Plaza. The reservations pouring in on Jack Rule of the reunion committee as we prepare these notes attest to the success of our past reunions and to the foregone conclusion that Chairman Irv Jakobson and his reunion committee will far surpass the top performance of other years. Irv has just informed us that several more items have been added to the program since the last mailing, including one stellar surprise attraction which will not be announced in advance. Inadvertently omitted from the program published in the April broadcast were the Saturday events starting with the class picture to be taken at 5:00 P.M., the banquet at 7:30 P.M. and Bob Miller's class movies and slides which are to be shown at 9 o'clock.

Architect Ted Steffian of Jake's committee is in charge of the banquet and is doubling as the artist who has made all the superb illustrations for the four sets of mailed notices which you have received from time to time since last October. Professor Jack Rule of the committee is reported to have crammed into his Course IX subjects one on the graphical recording of 115 sets of registration applications from as many 1921 men. Dexter Folder Company's genial sales manager, Mich Bawden, has charge of those activities

which are interspersed between the reunion events — golf, swimming, tennis — as well as the luxurious inactivities. Chick Kurth is producing Boston Edison's kilowatts in addition to transportation assistance for classmates returning via air, rail or car. Attorney Mel Jenney should patent his own unique publicity and promotion campaign which has been so effective in keeping us all advised on the reunion. Cap'n Jakobson, who heads the Oyster Bay, N.Y., shipyard of the same name, has urged all the brethren who have boats to sail them up the Sound to Pine Orchard. Jake is coming that way and it is understood that Fred Adams, Trev Peirce, and Dick Spitz are among those who will follow Jake's lead.

Added to the lists of names of probable attendees at the 30th reunion which have been run in this column every month since December, the following swell the total to 115 at this writing: Bill Clements of Cleveland, Herb DeStaeblor of St. Louis, Jack Giles of San Angelo, Texas, Max Goldberg of Newark, Warrie Norton of White Plains, N.Y., Sumner Schein of Boston and Al Wason of Dedham. Bill Clements is the owner and operator of real estate holdings in Cleveland. He is married and has no children. Herb DeStaeblor is vice-president in charge of purchasing and traffic, Lambert Pharmacal Company. Herb, Jr., was graduated from the Institute last June and is attending the graduate school of Washington University, St. Louis. Jeanne attended Sullins and is at the Chicago Academy of Fine Arts. Stephen is a freshman at Princeton. Jack Giles is president of his own oil production and geology firm, a member of the American Association of Petroleum Geologists and also president of the Klauder-Weldon-Giles Dyeing Machine Company. He is still enjoying blessed singleness. Max Goldberg is president of House of Proktol, Inc., manufacturers of cosmetics, owner of a beauty parlor and treasurer of the N. J. Master Hairdressers Association. He is married and has no children. Warrie Norton is on the administrative staff of Columbia University and has an extensive listing in *Who's Who*. He and Mrs. Norton have two married sons and a granddaughter almost two years old. Sumner Schein has his own architecture and engineering office in Boston. He is a member of the Massachusetts State Society of Architects and a trustee of the Grove Hall Savings Bank. Son Arthur is a junior at Technology; Janet is a freshman at Wheaton and Stephen is in high school. Al Wason is with the Sturtevant division of Westinghouse and reports seeing Ed Delany recently. He is a member of the National Society of Professional Engineers and collects medals and decorations as a hobby. He is the author of the section on air conditioning in the *Plant Engineering Handbook*, published by McGraw-Hill, 1950. The Wason's have two married sons and a three-and-a-half-year-old granddaughter.

Professor Emeritus William H. Timbie of the Electrical Engineering Department, has written a most welcome letter to our Class President, Ray St. Laurent, in reply to an invitation to be with us at this reunion as he has ever

since we were graduated. Bill has promised to attend if there is no conflict with his own 50th reunion at Williams and Mrs. Timbie's 50th at Mount Holyoke, both this year. His heart-warming letter, written from Winter Park, Fla., contains some very complimentary remarks about the Class as a whole and, in particular, the "27 pioneers of Course VI-A, the first class of the first coöperative course at the Institute." Everyone certainly will be looking forward with much pleasure to his being with us again. Bill has authored a new edition of Volume II of *Alternating Currents*, published by John Wiley and originally written with the late Frank G. Willson of the Wentworth Institute. Through the courtesy of David F. Lowry '40, Secretary of the M.I.T. luncheon committee of the Technical Association of the Pulp and Paper Industry, we learn that our own Jack Healy of Monsanto was elected chairman of the 1952 luncheon. In addition to Jack, others of the Class attending the 1951 luncheon in New York included Al Bachmann, Fred Binns, Ted McArn, Abba Orlinger and Saul Silverstein.

A hurried check of the M.I.T. directory of students indicates 17 sons and one nephew of members of the Class now at the Institute. We will appreciate comments if we have omitted names from this list. Parents names are given in parentheses: Graduate School — Allen L. Cudworth (James R. Cudworth). Seniors — John M. Lee (John G. Lee), Francis B. McKee (Commodore Andrew I. McKee), Wilfred H. St. Laurent, Jr., (nephew of Raymond A. St. Laurent). Juniors — Edward C. Facey (the late John A. Facey), Richard F. Jenney (Melvin R. Jenney), Robert M. Lurie (the late Joseph M. Lurie), John B. Mattson, Jr., (John B. Mattson), Arthur H. Schein (Sumner Schein), Robert M. Thurston (Robert R. Thurston). Sophomores — William C. Church (Walter E. Church), Nelson C. Lees (Mrs. Malcolm B. Lees, nee Cornelia Nelson), Edward H. Schwarz (Professor Edward R. Schwarz). Freshmen — Evan T. Colton (H. Seymour Colton), Peter Felsenthal (Robert M. Felsenthal), Decker G. McAllister, Jr., (Decker G. McAllister), Melvin R. Mattson (John B. Mattson), Robert D. Moore, Jr., (Robert D. Moore). Jenney and Lurie have consistently held places in the first honors section of the Dean's List and appear again in the recent issue for the fall term of 1950.

Robert E. Waterman, Vice-president in charge of scientific and technical activities of the Schering Corporation, Bloomfield, N.J., can take a bow for an article headed "Bataan Life March," appearing in the April issue of the *Industrial Bulletin* of Arthur D. Little, Inc., which says, in part: "A recent large-scale campaign to reduce beriberi in the Philippines with enriched rice has shown astonishingly successful results. . . . Extracts of bran and other polishings of rice discarded in milling were found effective in treating beriberi. From the crude rice-polish extract, vitamin B₁ (thiamine) was later isolated, identified, and then synthesized. Patents on the synthesis were assigned by the inventors to Research Corporation to create the Williams-Waterman

Fund for the Combat of Dietary Diseases. This fund largely financed the recent enrichment program." Bob and Dr. Williams, the discoverers and synthesizers of the vitamin, are the founders of the Williams-Waterman Fund. — Larry Castonguay is a design engineer with Pratt and Whitney Aircraft Company, East Hartford, Conn. Pierre, Jacqueline and Larry, Jr., are all in grade school. Philip T. Coffin, manager of pig and ingot sales and manager of the warehousing division, Aluminum Company of America, Pittsburgh, has a new home in Mt. Lebanon, Pa. Philip T., Jr., Sturgis and Patricia are all in college and Dorothy will enter college in the fall. Ralph is in high school.

Vernon C. Cole is power plant supervisor, Connecticut Light and Power Company, Waterbury. A member of the American Society of Mechanical Engineers and a 32d degree Mason, he and Mrs. Cole have a married son and daughter, two single sons and five grandchildren. Hilliard D. Cook, superintendent of mill and engineering, Sweet Brothers Paper Manufacturing Company, Phoenix, N.Y., is a past chairman of the Empire State section of the Technical Association of the Pulp and Paper Industry, past chairman of the New York State Society of Professional Engineers and president of the Phoenix Kiwanis Club. He has given a number of illustrated talks on a trip to South Africa. The Cook's son, John, is in the Navy. Doc wants to hear from Ed Clark, Carl Cohen and Bob Felsenthal. Robert S. Cook is an engineer on highways with the New York State Department of Public Works, Rochester. He is president of the Brigham Hall Hospital Board of Managers and a member of the F. F. Thompson Memorial Hospital Board. Married, he and Mrs. Cook have no children. Josiah D. Crosby is technical supervisor of the Industrial Plastics Department, Hood Rubber division of B. F. Goodrich Company, Watertown, Mass. He is president and a director of the Boston-Providence chapter of the Society of the Plastics Industry, a member of the Boston rubber section of the American Chemical Society, on the Alumni Council of M.I.T. and a member of the Town Meeting of his home town of Wellesley. Josh is married and has no children.

James R. Cudworth, Dean of the College of Engineering, University of Alabama, reports seeing Hugh McKinstry, Dick Smith and Art Wakeman recently. Jim is active in the American Society for Engineering Education and the American Institute of Mining and Metallurgical Engineers. Son James attended Duke and Alabama. Allen also attended Alabama and will obtain his master's degree at Technology this June, the third generation of the family to attend the Institute. Franklin T. Flaherty is a patent lawyer with Du Pont, Wilmington, Del. He is a member of the Philadelphia Patent Bar Association, the Federal Court Association, and an elder of the Swarthmore Presbyterian Church. The Flaherty's have two married daughters, a single son and daughter and four grandchildren. Alfred C. Garrigus is secretary and general manager of the C. G. Garrigus Company, Haddam, Conn. He and Mrs. Garrigus

have a married son and two grandchildren. Sydney W. Gould is vice-president of Lomas and Nettleton Company, mortgage brokers of New Haven, Conn. The Gould's son and daughter are both married and there are two grandchildren. Manuel M. Green is president and treasurer of the Atlantic Electrical Supply Company of Worcester, Mass. He and Mrs. Green have three sons. C. Doane Greene is with the Kellogg Corporation, New York City. A member of the American Institute of Chemical Engineers, his hobby is sailing and we hope he joins Cap'n Jakobson's fleet at Pine Orchard. Judge says he frequently sees Fred Adams, Herb Kaufmann and Dick Spitz. Daughter Joan is at Vermont and son Stephen at Lafayette.

The concluding installment of Rufe Shaw's account of his trip to Europe starts where we left the family in Switzerland. Says Rufe: "I had been toying with the idea of a sales trip to Italy. I took the night train from Lucerne. The bribery and corruption I saw at the border sickened me and I am an old hand. Apparently a U.S. passport and a carton of American cigarettes will take you anywhere and bring you back. On to Turin and the Fiat works, which cover a square mile. We had an appointment with the chief engineer, a dynamic soul who might have just stepped out of Detroit. The conversation was in Italian and I had a technical interpreter who was good. The engineer went way out into the realm of pure engineering but I kept pouring it to him. Suddenly he asked a fool question. I leaned back and laughed. Then I said to the interpreter, 'It's a good thing these men don't speak English. Nobody but an imbecile or a five-year-old child would ask a thing like that. Now tell them this but when you translate it be a little more diplomatic than I have been.' Whereupon my Italian friend looked over and said in good English, 'I know it was a fool question. I asked it on purpose.' Was my face red! It seems he was pouring the acid on me. He figured I knew my stuff and proceeded to buy four machines. The English, Italians and Germans formerly sold all the benders on the continent. When the Italians folded and the Germans were behind the iron curtain, the English cornered the market. But socialism shortened the steel supply and the English could not deliver. I boarded the night train for Paris. When the custom officer came through at midnight, I said sleepily, 'Here's a list of all the junk I bought. There's nothing there to interest you. Run along and let me sleep. Here are some cigarettes to help you pass the time of day.' 'Grazias, Signor,' was his reply."

H. Deane Griswold, production manager, Kendall Mills Finishing Division of the Kendall Company, Walpole, Mass., is active on the Walpole Red Cross, Parent-Teacher Association and a special town committee. Robert graduates from Yale and Marieta from University of Massachusetts this month. Janice is a freshman at Maine and Richard in high school. Lieut. frequently sees Ben Fisher, who has a new home in Dedham, Mass. P. Exton Guckes, President of the Passmore Lumber Company, Camden, Maine, is another prospect for Irv Jakob-

son's reunion regatta. His daughter, Mary, is married and has two children; Margaret is at Wellesley. Dugald C. Jackson, Jr., of the Aberdeen Proving Ground, has moved from Darlington to Havre de Grace, Md. Charles L. Pool, a life member of the Alumni Association, has left Wethersfield, Conn., and is living in Washington, D.C. John A. Scott of General Electric, now lives at 86 Furman Street, Schenectady, N.Y. New addresses have been received for Samuel T. Drew, Palmer W. Griffith, Norman W. Hunter, Brigadier General Henry Hutchings, Jr., Maurice B. Lieberman, Richard H. Morris and Michael Treschow.

Flemmon P. Hall, Director of Research, Pass and Seymour, Inc., Syracuse, N.Y., won the Ross Purdy award in 1949 for outstanding publications on ceramics. He is a member of the American Society for Metals, American Chemical Society, American Ceramic Society, American Mineralogical Society and served on the Visiting Committee for the M.I.T. Department of Metallurgy from 1947 to 1949. He is the coauthor of a book on *Phase Diagrams for Ceramics*. The Hall's have a son and daughter in grade school. Father Everett R. Harman is a priest at the Cathedral of the Madeleine, Salt Lake City. He is a licensed architect, a member of the Utah chapter of the American Institute of Architects, instructor in psychology and vocational counseling, founder of the Liturgical Arts Society, and former general manager of the Mutual Housing Association. He reports seeing Architect Sam Lunden in Los Angeles. Philip H. Hatch is general mechanical superintendent, New York, New Haven and Hartford Railroad, New Haven, Conn. Phil has written numerous articles and given many talks on Diesel electric motive power. He is a member of the Newcomen Society, American Institute of Electrical Engineers, Railroad Maintenance Officers Association, New England and New Haven Railroad Clubs. Daughter Barbara is at Syracuse; Jane and Marion are in grade school. Munroe C. Hawes is a partner in the real estate and insurance firm of Hawes and McAfee, Inc., Manasquan, N.J. He and Alex have five children and a grandson, the child of their eldest daughter, Aimee, who attended William and Mary. Munroe, Jr., was graduated from Yale and Elizabeth will be graduated from Emerson this month. Sandra is in high school and George in grade school.

Sumner Hayward, systems engineer, New York Telephone Company, New York City, says he has gone in for oil painting as a hobby. He is a member of the New England Society, chairman of the Brooklyn Council of the Telephone Pioneers of America, and the M.I.T. Club of Northern New Jersey. The Haywards' son is in an anti-aircraft battalion and their daughter is at Swarthmore. LeRoy M. Hersum is a consulting engineer on structural design of bridges, buildings, highway and airport structures, with offices in Boston. A former colonel and commander of 105th Research and Development group, he is a member of the Reserve Officers Association and the National Rifle Association. He is the author of an article on "Protective Designs for Military Airports." Roy says

he often sees Vic Phaneuf and Frank Whelan. He and Mrs. Hersum have two daughters, Lois at Radcliffe and Cynthia in grade school. C. Harry R. Johnson is general superintendent and a director of the Consolidated Paper Company, Monroe, Mich. He is a director of the Community Centre and president of the Monroe Golf and Country Club. The Johnsons have two daughters and a granddaughter. S. Murray Jones is assistant director of Rate and Research Statistics, Boston Edison Company, Boston. Claire is at Dana Hall and Malcolm at Rivers School. William F. Kennedy is a contracting engineer on structural steel with Bethlehem Steel Company, New York. He is a member of the New York State Society of Professional Engineers and spends his spare time doing cabinet work. He and Mrs. Kennedy have a daughter in high school. Albert J. Kiley is treasurer and a director of James A. Kiley Company, Somerville, Mass. The Kiley's have three children. Edwin S. Lockwood is division superintendent for electric distribution, Public Service Electric and Gas Company, Jersey City, N.J. He is married and has no children. Willis L. MacComb is the principal of Bridge Academy, Dresden Mills, Maine. Daughter Mildred attended Bridge and son Richard is at the Maine Vocational Training Institute.

Daniel MacNeil is in the sales department of the Wheeling Steel Corporation, Boston, and reports he sees Attilio Canzanelli and Ed Delany. The MacNeils have three children, Anne, who attended Regis College, Donald, McGill, and Jane in high school. Louis Mandel is a partner in the Mandel Production Company, manufacturers of chemical specialties, Newark, N.J. He and Mrs. Mandel have two daughters. Hugh McKinstry is professor of geology, Harvard University, and a consulting geologist. He is a former chairman of the Boston section, American Institute of Mining and Metallurgical Engineers, former vice-president of the Society of Economic Geologists, fellow of the American Academy of Arts and Sciences, the Geological Society and the American Mineralogical Society. He is the author of *Mining Geology*, published by Prentice-Hall, and some 40 technical papers. Hugh is married and has no children.

It is with deepest regret that we report the deaths of two members of the class and express sincerest sympathy to their families. John Winfield Scott, production consultant on the executive staff of the Eastman Kodak Company, Rochester, N.Y., died suddenly on March 23, 1951. Born in East Orange, N.J., he attended high school there and later studied at Brooklyn Polytechnic Institute, Columbia University and at Technology, where he was in Course I with our Class. He had been associated with Kodak as a chemist, in special work on the cine camera, in the development of various photographic apparatus and as general consulting engineer to sales and production departments. In 1939, he was in charge of the Eastman Kodak exhibit at the New York World's Fair. During World War II, he was a consultant to the armed forces on photographic and other mechanical projects. He made several trips to Kodak plants in Europe. He was a member of the board of

the Harley School and a trustee of the First Presbyterian Church of Rochester. He is survived by his wife, Dorothy; a daughter, Margaret; and two sisters, Mrs. George K. Weeks of New York and Mrs. John Paul Reese of Texas. We wish to thank Mrs. Scott for her aid in supplying these notes.

Harry Victor, standards engineer of the M. W. Kellogg Company, New York City, died earlier this year. No further details were available at the time these notes were prepared.

This is the last notice of our 30th reunion activities this month. You are cordially invited to Pine Orchard and to the class party to be held in Boston. Come early and enjoy the fun. — CAROLE A. CLARKE, *Secretary*, International Standard Trading Corporation, 67 Broad Street, New York 4, N.Y.

● 1922 ●

Your Secretary is happy to report to those of you who read the spring, 1951, issue of *The Phillips Bulletin*, the Andover Academy quarterly, that the notice in the obituary column of Don Carpenter's death is false, premature and exaggerated. On the contrary, Don is still very much alive, back with the Du Pont Company and living in Mendenhall, Pa. Your Secretary knows this to be true because of an April letter from Don in which he states that he is still alive to all except bill collectors.

Harold E. MacDonald is now president of the Household Finance Corporation of Brockton, Mass. Prior to joining Household in 1948, MacDonald had had many years' experience with nationally-known chain stores. — James W. Kinnear, Jr., has been appointed assistant to the vice-president of manufacturing of the United States Steel Company. Kinnear returns to U. S. Steel after a four-year absence, during which time he was president of the Firth-Sterling Steel and Carbide Corporation. — Duncan R. Linsley has been elected chairman of the executive committee of the First Boston Corporation, investment bankers. He succeeds George D. Woods who has moved up to chairman of the board of directors.

We are sorry to have to report the death of Colonel Charles H. Cunningham, I, in 1949, which news has just reached us. We also have word of the death on August 7, 1950, of Maurice F. Fainsbert, X. We have no information as to the cause of death in either case. Our sympathy is extended to their families. — C. YARDLEY CHITTICK, *Secretary*, 77 Franklin Street, Boston 10, Mass. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo 3, N.Y.

● 1923 ●

These notes may appear early enough to give you a final reminder of the meeting of the Class at the Copley Plaza Hotel in Boston at five o'clock on Alumni Day, Monday, June 11. There will be a preliminary report on hotel accommodations available for our 30th reunion and enough business for a short class meeting. The main purpose of the gathering, however, will be social.

Dr. Egon Kattwinkel has been ap-

pointed chief of the medical service of the Newton-Wellesley Hospital. He is married and has three children and lives in West Newton. Dr. Kattwinkel transferred to M.I.T. from Dartmouth. He is a specialist in internal medicine and a Fellow of the American College of Physicians. — HORATIO BOND, *Secretary*, National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass., HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, South Broadway, White Plains, N.Y.

● 1924 ●

Let's start off this month with another chapter in the Voyages and Relations of Seaman Simonds. The Chief dropped in the other day to bring the record up to date. Last October (his old ship the *Mount Mansfield* having been sent to the Great Lakes for conversion into an ore ship), Hank took off in the *Marine Snapper* for Korea. At Pusan he unloaded a mixed cargo with the rather lackadaisical assistance of South Korean longshoremen (took four days to do a one-day job!), then he went to Okinawa to pick up a load of ammunition for the French in Indo China. Saigon, where they were headed, is 47 miles up a river and since the banks are lined with Communist snipers they also shipped an armed guard. Two mine sweepers met them at the river mouth, and preceded them upstream.

By December Hank was in Singapore, just in time for the big riots you probably read about. A check by the local milk and coke companies after the fact showed that some 2,500 bottles went flying through the air. He succeeded in ducking at the right times. Then on to the Philippines where he held his usual reunions with Cris de los Reyes and Emilio del Prado. Seems that Del has become quite a philatelist. Any of you who are like-minded might do well to get in touch with him at 1175 Agno Street, Malate, Manila. It's Professor Emilio del Prado. After shipping a cargo including sugar, manganese ore, rubber and 100,000 cases of pineapples, the *Snapper* returned through the canal to discharge in Boston and New York. Hank has taken up accordion playing in a big way. What a picture that makes — the big freighter steaming slowly up river through the steaming Indo Chinese jungles, on deck the armed guard exchanging fire with Communists on the banks, the sweepers pulling mines out of the water up ahead — and the Chief Engineer in his cabin squeezing out the soulful music of "Home Sweet Home"!

On June 13, Mr. and Mrs. Harold Young leave on the *Neptunia* for a tour of Britain. Chief objective, the big British Exposition. They'll be back sometime in August. Thomas Marshall Nevin, Honorary Secretary, and President of the M.I.T. Club of Mexico, has a new business address. He has moved from Paseo de la Reforma to Ave Insurgentes. Hope these names are no reflection of Jack's political activities. And Henry Rau has moved, too, back to Washington. During the war he was in the Quartermaster General's office. Don't know at this end whether he's back in the same spot or not, but if so he may be replacing Paul Schreiber, another Course X

man who has just been shifted from that office in Washington up to Clare, Mich. Sorry to have to report the death of another of our classmates, John A. Price, on August 9, 1950. Lieutenant Commander Price was with us as a regular Navy student in course XIII. No further information is available.

Bill Correale forwards a clipping about the annual convention of the New York Department, Reserve Officers Association. Elected a vice-president to represent the Navy was Captain Howard B. Stevens, U.S.N.R. Howard is still with the New York City Department of Public Works, engineer in charge of marine equipment. One sure attendant at Alumni Day is Paul Cardinal. His daughter, Joan, graduates that morning from Lasell out in Newton. Paul will be handy to have around to check on Seiler's chicken salad for us — he is now a full-fledged member of the American Public Health Association.

Last month we told you about two members of the Class heading work on atomic-powered subs and planes. Now comes a third and all-important bit of intelligence. Monsanto Chemical has been given the go-ahead by AEC to determine whether private industry can build and operate a plant to use atomic energy to generate electric power. And Executive Vice-president Charles Allen Thomas will do the job. "Only a month ago," says *Time*, "AEC Commissioner Sumner Pike said he doubted whether atomic power plants could ever make electricity cheap enough to be commercially feasible. Thomas thinks he can do it." On the basis of past accomplishment if it can be done at all Charlie Thomas is the man to do it. To have these three top jobs in atomic power development in the hands of M.I.T. men is remarkable. To have them all '24 men is phenomenal!

Advertising Note: To be issued in June, a new edition of "Thoreau's Cape Cod," words by Henry David Thoreau, illustrations by your Secretary. Last spring it was *Thoreau's Maine Woods*, now the Cape, next fall Walden. One helpful thing about this sort of collaboration, the author's objections to the artist's work are negligible. — HENRY B. KANE, *General Secretary*, Room 1-272 M.I.T., Cambridge 39, Mass.

● 1925 ●

We are receiving a fine response to Ave Stanton's letter and hope that those of you who have neglected to act will soon take action. Don't forget that your Secretary would like to receive some words for this column along with your contributions.

Frank Klein, XIV, has written to me from Mountain Lakes, N.J.: "After 14 years in the Air Force, flying airplanes and doing various sorts of engineering duties, I was retired from active service in 1939. For two years I was assistant chief of laboratories at the Glenn L. Martin Company, leading builders of Martin aircraft. Having spent eight of my Air Force years at Wright Field on aviation fuels and lubricants developments, I then decided to return to similar type of work by joining the engineering division of Esso Standard Oil Company as head of the aviation group. My job now includes about anything you can consider technical about avi-

ation fuels, lubricants and specialty products of interest to Esso. This of course involves trying to keep up to date on new aviation developments such as jet engines, rockets, and, I suppose, eventually atomic power. I have just been given the imposing title of chief aviation co-ordinator, but am not sure yet what I am to co-ordinate. I shall welcome any '25 cohorts who will take the trouble to call me when in New York. My office is in the Esso Building, 15 West 51st Street, and I can be found there about two-thirds of my time."

I am sure it will be of interest to all of you to know that Ave Stanton, XV, and Wally Westland, I, have joined forces with the Cummins Diesel of New England, Inc., and now have headquarters at 201 Cambridge Street, Allston 34, Mass.

The Philadelphia *Inquirer* recently carried the information that James C. Evans, VI, civilian assistant to the Secretary of Defense was scheduled to give a major speech on the major roles being played by America's Negro soldiers in the Korean campaign and the steps underway in the Department of Defense to integrate the country's fighting forces. Evans was formerly vice-president and director of engineering for West Virginia State College; then, following service in the now discontinued National Youth Administration, he became civilian aide to the Secretary of War and was named to his present post when the Defense Department was created.

John M. Osborne, X-B, was featured recently in *The Rainbow*, employee magazine of General Aniline and Film Corporation which has been presenting "M.I.T. people who form a strong link between the great institution on the Charles River in Cambridge, Mass., and General Aniline." Osborne's industrial experience includes five years of consulting work, writing a service manual for salesmen and service engineers, design and operation of an acoustical laboratory, and teaching in a company school for salesmen and junior engineers. He came to Ozalid from Remington Rand, Inc., in January, 1949, where he was chief of liaison and engineering service, and senior industrial engineer. He has a family of five and lives in Binghamton. For recreation, he does wood and metal work, owns short-wave radio equipment, and keeps a high interest in athletics. — F. LEROY FOSTER, *General Secretary*, Room 5-105, M.I.T., Cambridge 39, Mass.

• 1926 •

When you are stumped, bushed or up a tree with no possible way out what is the proper thing to do? If you paint yourself into a corner, is it better to walk back over the wet paint or stand in the corner and wait for it to dry?

Your Secretary finds himself in such a situation. These June notes are due at the Review Office on April 20 — if there were sufficient urgency, an extension to early May could be obtained. In any event, this particular set of class notes must be written *before* the great event, our 25th reunion. However, the June copy of *The Review* will probably reach you right *after* you return from the reunion. Therefore, there is no point in elaborating further on

our coming reunion and having broken my crystal ball last week, I will not attempt to tell you about what happened at the reunion. I hope that we will be able to get the reunion story into the July issue. Meanwhile, GREETINGS TO THE CLASS OF TWENTY-SIX. — GEORGE WARREN SMITH, *General Secretary*, E. I. du Pont de Nemour and Company, Inc., Room 1420, 140 Federal Street, Boston, Mass.

• 1927 •

The following letter was received from Ezra Stevens: "Here is some really good news for your class notes. I don't know whether you realize it or not but Dick Hawkins was left a widower four years ago. It was pretty rough going for a while but now the skies have cleared per the enclosed clipping. The ceremony will be on June 30. Everyone is very happy over the whole thing and enthusiastic about Mrs. Hawkins to be. She is the principal of Derby Academy where the children go to school." The clipping reads as follows: "Mr. & Mrs. George N. Talbot of Woodstock, Vt., announce the engagement of Miss Mary Louise Talbot of Hingham, to Mr. Richard Pratt Hawkins, son of Mr. and Mrs. Edgar M. Hawkins of Hingham, formerly of Rochester, N.Y. Miss Talbot is the daughter of the late Mr. and Mrs. George S. Talbot of Hingham."

The Rainbow, employee magazine of General Aniline and Film Corporation, has featured "M.I.T. people who form a strong link between the great institution on the Charles River in Cambridge, Mass., and General Aniline." This column recently featured Les Woolfenden, concluding with the following: "In January, 1940 he was named Assistant Chief Engineer and four and one-half years later he assumed the overall responsibility of Plant Engineer. The Engineering Department at Grasselli now comprises more than seven hundred employees in the Field Engineering, Design, Construction and Repair and Powerhouse sections."

We are indebted to Bob Dorey (in care Industrial and Scientific Instrument Company) for the following sketch of his past and current activities: "After starting out in the Class of '27, Course VI, I eventually transferred to Tufts College with the expectation of going into medicine. However, I finally wound up in business and for some time now have had my own company, acting as a distributor for a wide variety of scientific and laboratory apparatus. Naturally, a great deal of my time is spent around the Institute, although I must confess I seldom seem to run into any of the '27 men. After many years of playing the part of spectator, Mrs. Dorey and I finally plunged into the breeding of quality Cocker Spaniels. Our program is developing nicely and we have found it a most absorbing and satisfying hobby. We have hopes that we will finish our first champion within the next 12 months. We would be very interested to hear from any of the '27 men or other Alumni who are interested in the breed."

Fritz Glantzberg is now a brigadier general and commands the 2d Bombardment Wing M at Hunter Air Force Base, Savannah, Ga. In reply to a note of congratulations, he says his promotion was "very

acceptable." We say it is very creditable. — The following really shouldn't be run because there is no word as to the final outcome, but early this spring Russ H. Brown was candidate for a seat on the Falmouth, Mass., Planning Board. He is a member of the Massachusetts State Association of Architects and a director and member of the Boston Architectural Club. — Louis Bertil Peterson has been made assistant to the executive vice-president of the Newport News Shipbuilding and Dry Dock Company, Newport News, Va. He has been with this company 24 years, is married and has two children.

The following clipping from the *Wellesley, Mass., Townsman* will be of interest: "A Wellesley man, Francis J. Crandell of 24 Beverly Road, assistant vice-president of Liberty Mutual Insurance Company's Loss Prevention Dept., was the featured speaker at the joint meeting of the American Society of Civil Engineers and the American Society of Military Engineers held Saturday at New Orleans. Dealing with safety activities by his company for American workers, Mr. Crandell discussed research on blasting vibrations, reduction of mill vibrations, and described Liberty Mutual's sub-audible sound detector currently in use at Hudson, N.Y. tunnel project to detect rock falls by recording rock noises. An MIT graduate and connected with Liberty Mutual since 1936 the Wellesley man is a member of the Boston Society of Civil Engineers, the American Society of Civil Engineers and holds licenses as a professional engineer in Massachusetts and New York. Last year he received the Clemons Herschel prize award from the Boston Civil Engineering group for his article on ground vibrations due to blasting which appeared in the group's journal and attracted widespread interest in engineering and construction fields."

"The 20 Questions" questionnaire has now gone out and I hope that all of the members of the Class will co-operate by filling them out and mailing them back. The little matter of compiling a 25th-year reunion book for the Class is going to be a whale of a job, starting with collecting the filled-in questionnaires, so get yours out of the "stagnant" file and send it to me. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, 50 West 50th Street, New York 20, N.Y.

• 1928 •

Dick Hildick is now head of manufacturing operations for the Arlington Mills division of William Whitman Company, Inc. Before going with Arlington, Dick was vice-president in charge of manufacturing of Textron in the New England area. Recently, he has served as chairman of the textile division for the Lawrence, Mass., Community Chest. Ed Walton has been named vice-president and general manager of Kaman Aircraft Corporation at Bradley Field. Ed has served on the War Production Board and was aircraft representative on the Harriman mission to London during 1943 and 1944. He also acted as assistant to the president of American Airlines and European general manager of American Overseas Airlines. Before joining Kaman, he was associated with Curtiss

Wright as European sales manager. Ed is a member of the Institute of Aeronautical Sciences of this country and an associate fellow of the Royal Aeronautical Society of Great Britain.

Bob Harris, Professor of Biochemistry of Nutrition of the M.I.T. Department of Food Technology, was decorated by the president of Ecuador in Quito. He received the title "Oficial" in the National Order "Al Merito." The decoration was given in recognition of the assistance Bob has given Latin American countries. He is currently serving as scientific director of Ecuador's National Institute of Nutrition. Vernon Lewis, formerly associate chemist with the Du Pont Company, has assumed new duties as assistant professor of the University of Delaware's department of mathematics. During the war he worked on the Manhattan Project. In 1944 he was chief supervisor of the statistical section, Hanford Engineer Works.

John Leslie, Vice-president of Pan American World Airways, has been elected a director and placed in charge of administration. During 21 years with Pan American, John has served in various engineering operations and administration positions and has developed engineering techniques for long-range flight, making possible the first commercial air service across the Pacific. Ralph Evans is superintendent in charge of color quality control for Eastman Kodak Company and author of the book, *An Introduction to Color*.

Our Class has really been represented among the officers and directors of the M.I.T. Club of Chicago. Stan Humphrey, partner of Booz, Allen and Hamilton, has been elected president. Stan held the office of club vice-president, previously. John Praetz who had been club treasurer last year is now one of the six club directors. John heads Hotpoint's national Product Service operations as manager of the Product Service division. Bud Gray, President of Whirlpool, Benton Harbor, Mich., is also a director of the club.

Ralph Jope has been on jury duty which kept him sitting still for a while. Our Prexy has been on a terrific schedule for almost two years as associate chairman of the \$20,000,000 M.I.T. Development Fund drive — which so successfully went over its goal. — GEORGE CHATFIELD, *General Secretary*, 49 Eton Road, Larchmont, N.Y.

• 1930 •

It is our sad duty to report the deaths of three classmates. Mrs. Marshall W. Jenkinson, who passed away in June, 1950, was the wife of a member of the Class of 1927 and resided in Syracuse, where her husband is a professor of bacteriology at the university. Oscar Hedlund informed the Alumni Office of the passing of his old track star Richard L. Berry in November. Dick was a research chemist for Barbasol in Indianapolis. Recent word has come from Lubbock, Texas, of the death of Paul T. Jones, in January. Paul was a professor of chemistry at Texas Tech. To the families of these members of our Class, 1930 extends sincere sympathy.

Professor Lawrence B. Anderson, Head of Course IV at the Institute, has been awarded an Outstanding Achievement Medal by his first alma mater, the Univer-

sity of Minnesota. Another classmate in the teaching profession is Norman H. Dolloff of San Jose State College in California. One of our professional military men, Homer Davis, who is located in Arlington, Va., was recently promoted to the rank of colonel. Our genial reunion movie camera man, Dick Wilson, has been appointed superintendent of Eastman Kodak's emulsion coating division in Rochester. Bryant Kenney is the chairman and managing director of the newly formed Standard-Vacuum Refining Company of South Africa. He was formally assistant general superintendent of Esso's Bayway refinery. Charlie Dwight is now secretary-treasurer of the Hartford Electric Light Company. Leon Thorsen has headed a corporation bearing his name in Ellsworth, Maine, for the last 10 years and is engaged in machine and metal work. On the side he manages a deep-freeze business in conjunction with his farm.

Tom De Marco has joined Monsanto Chemical's plastics sales staff. The superintendent of Kennecott's copper refinery at Garfield, Utah, is Harry Shaw, who has had wide mining experience both in this country and in South America. Phil Torchio has been appointed assistant general manager of the Ohio Power Company. Bob Foster of Concord is the new president of the Associated General Contractors of New Hampshire. In Jack Bennett's annual letter to your Secretary, he reported Ted Riehl's election as president of the board of trustees of the Old Trail School in Akron.

The Tony Savinas sent a unique Christmas card announcing the birth of their first child, a daughter, in December. Their new home is at 79 Ledge Lane in Stamford, Conn. Elizabeth Neilson of Santa Barbara, Calif., is now Mrs. Carl A. Lewis. In the news recently for his spreading fame as a pen and ink artist was Sidney Kaye, who is assistant treasurer of Suffolk Grocery Company in Boston. Emilio MacKinney of Mexico City heads a group of prominent Mexican Catholics who own approximately 150 buildings including monasteries, convents, and other property used for church purposes. An old Mexican law prohibiting church ownership of such buildings may soon be taken from the books, in which case MacKinney's associates could transfer their property holdings to the church.

Leslie Guilford has gone to Washington, D.C., Ormond Lissak to Dearborn, Mich., Harold Plant to Wilmington, Del., George Wyman to Coffeyville, Kansas, and Cyril Harding to Los Angeles.

We hope to see a large number of you at Alumni Day on June 11. Our classmate Jack Latham is chairman of this year's Alumni Day Committee and deserves our full support. Your Secretary and his two assistants would appreciate a little more activity from you all in the letter-writing department, so that 1930 could appear in these notes more frequently. Henry Bates has written to your Secretary concerning the group pictures taken at Saybrook last June at the reunion. The photographer lost the list of names of persons ordering copies and has the pictures ready for mailing. His name is Edward F. Powers; address, Post Office Box 165, Old Saybrook, Conn., and he will be glad to send the pictures to you upon your request. — PARKER H. STAR-

RATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass. *Assistant Secretaries*: ROBERT M. NELSON, 2446 Iroquois Road, Wilmette, Ill.; ROBERT A. POISSON, 150 East 73d Street, New York 21, N.Y.

• 1932 •

Fred Green of Westport, Conn., is the only one of you who has dropped me a note and shows his continuing interest in our activities by forwarding the following announcement: American Brake Shoe Company announced on March 14 the election of Raymond H. Schaefer as vice-president. Ray is living in Ridgewood, N.J. and we all wish him much success in his new job. — Another vice-president among our classmates is Addison Ellis, who in January was promoted to vice-president of Smith, Kline and French Laboratories, Philadelphia pharmaceutical firm. Add joined this company in 1936, serving subsequently as office manager, and later as personnel manager and market research director. In 1947 he was named assistant to the vice-president. A member of the board of managers of Children's Hospital of Philadelphia, he lives in North Hills, Pa. Belated congratulations to our former editor of *The Tech*.

Professor Thomas W. Mackesey has been appointed dean of the College of Architecture at Cornell. Professor Mackesey is married to the former Eloise E. Ross of Lowville, N.Y., and they have four children. His specialty is regional planning; and from the clipping reporting this appointment, we learn that he has been very active in this field. — Another promotion announced in February is that of J. Alan MacDonnell as assistant general sales manager of Gilbert and Barker Manufacturing Company. In his new post, Mr. MacDonnell will assist the vice-president and general sales manager in administering the activities of the four sales divisions of the West Springfield concern. He came to Gilbarco in 1934 and now makes his home in Longmeadow, Mass., with his wife and son.

John W. Leslie is the New England chief of the military branch of the United States Corps of Engineers. This came to our attention by a clipping which tells of his being one of three experts at a Tufts College forum, "A Future in Engineering." He is now in charge of all military projects in the division including four veterans' hospitals and the Limestone Air Force Bomber Base in Maine. — One marriage to report this time, that of William Bannon and Eleanor Harte, in February. The newlyweds will reside in Arlington, Mass. Bill is a supervising naval architect at the Boston Naval Shipyard.

A press release from Dexter Chemical Corp. advises us that Sidney M. Edelstein, their technical director, gave a talk before the northern New England section of A.A.T.C.C. on the subject of detergents. Before closing these notes, we would like to remind you that a year from the time you are reading this we should all be at our 20th reunion. Let's all plan to be there. — CLARENCE M. CHASE, JR., *General Secretary*, 1424 East 7th Street, Plainfield, N.J. *Assistant Secretaries*: CARROLL L. WILSON, Cannondale, Conn.; WILLIAM A. KIRKPATRICK, Allied Paper Mills, Kalamazoo, Mich.

● 1936 ●

The news this month again approaches the vanishing point, and perhaps an appeal to you "guys" of the Class of '36 is in order. It is pretty difficult, from one given point, to have far-reaching tentacles which will ferret out news and happenings at distant points on the globe. If any of you, in cities where your classmates have migrated, can add to my store of knowledge, won't you please drop a line to this office? I know the remainder of your classmates will be glad to hear of your good fortunes, the business changes you make, and even human interest quips such as one received from Mal Holcombe just today.

Mal reports that Phil Ober has just resigned from a previous connection to join forces with the Arma Corporation; to be located at the Mineola division on Long Island. Phil, as you no doubt know, has been in Muskegon, Mich., but plans on buying a house somewhere in Long Island and transporting his wife and three children there to take up the threads of his new connections. The human interest quip Mal throws in is that "according to Phil's report, he is still the same size and shape; and his capabilities of swallowing beer at the proper time and under the proper circumstances are still the same."

Dave Varner is prospering as a patent lawyer in Washington and has recently transferred his activities to the offices of Cushman, Darby and Cushman at 730 15th Street, N.W., Washington, D.C. — By way of the Wellesley grapevine (Ed Snow's wife to Mal Holcombe's wife), it is revealed that Ed is now in the purchasing department of the Hawkeye division of Eastman Kodak. Ed may be a Kodak man by day, but when no one is looking he buries himself in his basement with television experiments. The story goes that he is quite an expert in taking the sets apart, and perhaps, in some instances, even getting them back together.

Congratulations, Mike Paskowski, on your recent marriage to Norma Willa Harvey of Beverly, Mass. Sorry we couldn't be there to join the well-wishers.

Registrations for the reunion are coming along with a few added each week. William A. Cresswell, Jr., and Franklin P. Parker signified their intention of joining us today, and are added to an already growing list. Perhaps this list will grow sufficiently to fill the Weekapaug Inn to its capacity. Mal Holcombe reported in his recent communication that both Phil Ober and Ed Snow are hoping that they will be able to be there, too. In just a few days now all our old friends will be gathering at beautiful Weekapaug Inn for the class reunion. If you have looked at the circulars and the program outlined for the reunion, I am sure you want to joint the rest of your fellow classmates. There isn't much time left — so please get busy and send in those reservations. Let us not have anyone left out simply because they delayed just a little too long to get in the quota. — ROBERT E. WORDEN, *General Secretary*, Fidelity-Philadelphia Trust Building, Philadelphia 9, Pa.

● 1937 ●

Received a letter from Walt Blake the other day in which he said he is taking two years' leave of absence from Pillsbury

in order to return to active duty with the Department of the Army in Ordnance Research and Development. He is going to be stationed at the White Sands Proving Ground, Las Cruces, N.M., and will have his family with him. — Lieutenant Colonel James D. Sams has been assigned to the ordnance section of Japan's Logistical Command with headquarters in Yokohama. During World War II, Colonel Sams was awarded the Bronze Star with oak leaf cluster and the French Croix de Guerre in recognition of his wartime services as commander of the 52d Ordnance Group, First Army.

Jervis C. Webb is now treasurer and general manager of the Jervis B. Webb Company, which company is engaged in the manufacture of all types of industrial conveyors. Before joining them, he was with the Rubber Reserve during the war, then with the United States Rubber Company in New York as head of the chemical division's public relations. — Dr. Fabian L. Rouke, who studied engineering at M.I.T. then switched to psychology at Fordham, set up Lie Detector Consultants with Dr. J. L. Kubis of Fordham. He is also clinical psychologist for a private sanitarium and lectures at the City College of New York, New York University and Manhattan College.

Herbert F. Goodwin, Assistant Professor of Production Management at the Institute, and Leo Moore, Instructor, are helping a group of Dartmouth College engineering and business administration students in an assignment for the simplification of factory and shop processes for manufacturing firms.

We have three marriages to announce. Dorothy N. Davis was married on March 4 to William T. Ricks, Jr. Their address is Caripito, Venezuela. Charlotte West was wed to Charles F. Healey; and Julia M. Snow married F. E. Neagle, Jr., on December 12. Also in December, Celia Conway of Washington announced her engagement to Sidney Hirshon.

Jim Newman has been admitted to the partnership of Booz, Allen and Hamilton of Chicago. William H. Healey is now in charge of chemical market research at the General Dyestuff Corporation. Charles E. Reed, engineering manager of the General Electric chemical department, was one of the speakers at a workshop session to discuss tax policy held in Pittsfield, Mass. Dr. Reed is coauthor of *Applied Mathematics in Chemical Engineering* and helped organize an advanced extension course in industrial plastics in Massachusetts. He assisted in the design of a chemical engineering laboratory at Technology and became consultant to the Chemical Warfare Service located there.

William B. Bergen, who went with the Glenn L. Martin Company upon graduation from M.I.T., was recently elected vice-president — chief engineer. In 1943, he was given international recognition when he received the Lawrence Sperry Award of the Institute of Aeronautical Sciences for his "theoretical and experimental investigations of dynamic loads on aircraft." See you in the fall. — WINTHROP A. JOHNS, *General Secretary*, 34 Mali Drive, North Plainfield, N. J. WALTER T. BLAKE, *Assistant Secretary*, White Sands Proving Ground, Las Cruces, N. M.

● 1939 ●

Ed Vivian, Associate Professor of Chemical Engineering at the Institute, spoke at the annual meeting of the Technical Association of the Pulp and Paper Industry; his subject was M.I.T.'s proposed educational program for the future. During March, Brad Hammond reduced by one the rapidly diminishing ranks of our bachelors by marrying Phyllis Reed in Fall River, Mass.

The only other item reaching this desk during the month was a copy of a feature article from the Boston Sunday Post praising the splendid work of Fran Sargent, who is director of the Massachusetts State Department's division of Marine Fisheries. Fran is dealing with quick-freeze fishing boats, international treaties and conservation of various oceanic life, all of which adds up to an extremely important job.

Trusting you will all write soon "again." — STUART PAIGE, *General Secretary*, 701 Mill Plain Road, Fairfield, Conn. *Assistant Secretaries*: GEORGE BEESLEY, Whittemore-Wright Company, Inc., 62 Alford Street, Charlestown, Mass.; MICHAEL V. HERASIMCHUCK, Post Office Box 495, Bethlehem, Pa.

● 1940 ●

Several more classmates have sent in their class dues for the next five years. George Weinbrenner, along with his dues, writes that he has just been recalled into the Air Force as a colonel. He expects to go to the Pentagon first and by the time these notes are in The Review he will probably be overseas. George is still a bachelor and at the time of his recall into the Air Force was president of B. C. Wills and Company of Detroit, Mich.

George Pollak is now a commander in the Navy and stationed at the Naval War College, Newport, R.I. He writes: "I spent three years at Long Beach Naval Shipyard as industrial engineering officer. I was one of the last to depart when the Yard was closed in June, 1950 (it has reopened since then). Drove east with my family (wife and one son) and reported to the War College as a student in the first class of the new command and staff course. Will leave here in June, probably to sea duty in the Pacific. Sorry I missed the class reunion last summer, but was en route at that time. Hope I will be able to get to Alumni Day this year."

The long-distance letter of the month comes from Henri de Cérenville in Lausanne, Switzerland, where he has his own soil mechanics laboratory and civil engineering office.

Lila Swift and Donald Monell became engaged in February. Their wedding is to take place this summer. Lieutenant Colonel David Parker gave a talk before the Pittsburgh Post of the Society of American Military Engineers on atomic weapons. Bradley Dewey, Jr., has been elevated to the position of vice-president of the Cryovac division of the Dewey and Almy Chemical Company, and Alfred P. Barton has been appointed chief engineer of the ordnance division, Elgin National Watch Company.

Don't forget to send me news and your class dues. Also, if you would like to get in contact with a classmate whose address

you have lost, drop me a line and I'll send you the latest information from the alumni files. — ALVIN GUTTAG, *General Secretary*, 7114 Marion Lane, Bethesda 14, Md.

• 1941 •

This may be our last chance to tell you of the plans of the 10th reunion to be held on the week end of June 9 at the Curtis Hotel, Lenox, Mass. The official program includes Saturday lunch through Sunday lunch, but the real party-goers plan to arrive Friday and leave Monday morning to drive to M.I.T., Monday, June 11. Invitation includes '41 Alumni and their wives. Rate is \$11 per day American Plan, which includes three meals. If you arrive for dinner (evening) and leave after breakfast (thus missing lunch) the rate for that day will be \$8.75. Added to this will be the Massachusetts old age tax and gratuities which will all be handled on your hotel check. Reunion costs over and above the hotel bill will not exceed \$5 per person and will include the banquet extras, prizes, and so on. Money not required to cover the reunion expenses will be refunded. There will be no solicitations.

Here is the tentative schedule as of the date of this writing — no doubt changes will be required by the time of reunion but you may be assured that the modifications will be minor. Golf and tennis tournaments are planned for Saturday. Those interested in this activity should plan to arrive as early as possible on Saturday, preferably during the morning. Saturday luncheon: 12:30 to 1:45 P.M. At 3:00 P.M. there will be a soft ball game, and also a card tournament for those who are not athletically inclined. At 5:30 P.M. cocktails and informal dancing. Banquet at 7:00 P.M.; we hope to have an entertainer at the meal. Dance Saturday evening at 9:30 P.M. with special entertainment during intermission. Sunday breakfast, 8:30 A.M. and a group picture at 9:30 A.M., followed by two hours of sight-seeing, driving and walking around Lenox. Dinner will be served at noon on Sunday. We emphasize that these plans are tentative as of this writing but that the final program will have been formed by the time you read this column. We include this information for the benefit of those who have not received the official literature from Reid Weedon the reunion chairman. If you are among the latter and still wish to participate, get a quick note off to Reid Weedon, 4 Overlook Drive, Winchester, Mass., for the current details — STANLEY BACKER, *General Secretary*, 335 A Harvard Street, Cambridge, Mass., JOHAN ANDERSON, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

• 1943 •

A little daughter, Jane Alison, was born to Bernie and Sylvia Brindis on February 24, 1951. The Brindis' are living in New Brunswick, N.J., on Voorhees Road. Proud parents of Ann Laura Schultz born on April 10, 1951, are Mr. and Mrs. Morton Schultz who are to be found at home in New York City at 77 Cooper Street.

On January 27 in Stamford, Conn., the wedding of the former Lydia Marion Mershon and Herbert M. Johnson, Jr., took

place. Mrs. Johnson's home is in Stamford and she is a graduate of the Connecticut College for Women where she is a Phi Beta Kappa. Herb is with the Sangamo Electric Company in Springfield, Ill., which is where the couple will live. The wedding of the former Gloria Welch and Robert B. Case, M.D., took place on January 27 also. The bride, whose home is in New York, is a graduate of the University of Rochester, and had previously attended Sarah Lawrence. Her husband took his medical schooling at the College of Physicians and Surgeons, Columbia University, and is now assistant resident physician at St. Luke's Hospital. The couple spent their honeymoon in Jamaica, British West Indies, and are now living at 47 East 88th Street in New York.

Late in February the engagement of Catharine Maytag to Gwynn H. Robinson was announced by her parents. The future bride's home is in Colorado Springs, and she is an alumna of Vassar. Robinson was with the Mathieson Chemical Company but expected to return to active duty with the Air Force in May. — Alvin B. Buck, already on active duty with the Air Force, has been promoted to a major. Alvin is stationed at the Andrew Airfield in Washington, D.C., and lives with his wife and daughter, Susan Jane, in Hyattsville, Md.

Vincent Bashore, who until early this year was living in Dewitt, N.Y., has moved to Los Angeles. Dr. Audrey A. Bill is now with the Children's Hospital in Philadelphia. She was formerly living in Wayland, Mass. Waldo Davis has moved to Waldwick, N.J., from Rochester, N.Y. Donald Dissly, who formerly lived in Kewanee, Ill., calls Clarksville, Ind., home. Robert Frey has returned from the Netherlands and is stationed in Wilmington, Calif. He is still with the Shell Oil Company. Simon Gluck has left Staten Island, N.Y., and is living in Philadelphia. Bob Mason has moved from Brookline to Holyoke, Mass. Alan Milman has returned to active duty with the Army and is stationed at Fort Dix, N.J. Howard Scott has moved to Milwaukee from New York City. Daraius Sukhia, who used to call Schenectady home, is now in Baltimore, Md. George Theriault is living in Salem, Mass., having moved from New York. John F. Tyrrell, our class agent, is located in New York with *Metal Progress*. He had formerly been living in El Cajon, Calif. Milwaukee is no longer where Ervin Volbrecht lives; he has moved to Anchorage, Alaska. Lloyd Wilkie has left Cambridge for Los Angeles. — CLINTON C. KEMP, *General Secretary*, 29 Verlynn Avenue, Hamilton, Ohio.

• 1945 •

We hope you will be on hand to help launch this year's graduates as well as reminisce with your fellow classmates and other alumni friends on Alumni Day. As previously stated, we hope to have a get-together before the Alumni Banquet, but it looks as though it will have to be in the men's bar at the Copley, not a private room as we had last year, for Bill McKay, who was to handle the affair, will be back on active duty with the Navy by that time. Bill is supposed to report to the Naval Air Station in Pensacola, Fla., on June 4. We

are sorry to see Bill leave. Bill says he is "glad" to have the opportunity to be the advanced guard for the rest of us. I hope he is wrong!

Walt Harte reports that, after his thesis work with Jack Thompson at Edgewood Arsenal and graduation, he worked for Foster-Wheeler in their petroleum refinery division in New York for 18 months before going to Florida with the Minute Maid Corporation. Walt was with Minute Maid until the first part of April as a process engineer at which time he started with Jefferson Chemical Company in New York. Walt also reports that he is still single and healthy. Walt said that Craig Grubb, X, is one of the senior men at Jefferson Chemical. Ed Stoltz reports in a recent letter that President Killian has appointed him Honorary Secretary in Morgantown, W. Va. Ed says that Morgantown is the home of West Virginia University and also a beautiful golf course which requires one short leg for navigating purposes. As Honorary Secretary, Ed will assist the Admissions Office in the screening of prospective Technology students.

The Rainbow, employee magazine of General Aniline and Film Corporation, Volume 7, No. 4, contained a very interesting article reporting the progress of Ernest T. Larson, Jr., who joined the staff of the Central Research Laboratory at Easton, Pa., in November, 1945. Here he worked on spectrophotometry and the reaction rates of vat dyes. Since February, 1948, Ernie has been working in the Ansco physics department and is now primarily concerned with X-ray emulsions and latent energy theory. He lives in Binghamton with his wife, Barbara, and their two daughters, Janet, three, and Karen, four. Richard L. McManus, technical engineer in the commercial division of the aircraft gas turbine division of the Lynn General Electric plant spoke at a recent Masonic meeting on the subject of "Jet Propulsion." I understand that copies of this address can be obtained by writing Dick directly. Of course, enclose the necessary quarter to defray mailing expenses! A recent address change indicates that Mary E. Sullivan is now Mrs. Paul Nesboda of 3423 Oakwood Terrace N.W., Washington, D.C.

We now return to the good old "green sheets." Howard B. Bensusan, that since leaving M.I.T., has received an M.S. in organic chemistry at Purdue University and last spring he was working on his Ph.D. in biochemistry at Boston University. Chris Boland worked three years at Distillation Products, Inc., of Rochester developing high-vacuum fractionating stills before returning to school at Columbia where he received his M.B.A. last June. While in the Navy Bert Bossler saw service in Virginia, California, and China. Since then he has worked for American Meter in Erie, Pa., and as a lab assistant at the Institute where he received his M.S. in Electrical Engineering in 1948. Our records indicate that Bert has now returned to Erie. George Brothers married Mollie Otero on April 5, 1947; they are the proud parents of George, 3d, born in November, 1949. The last we knew, George was with the Lerio Corporation in Mobile, Ala. Charles C. Buik, 3d, II, married Jeff Jeffries, V, just before starting middies school in Ithaca.

N.Y. They have a son, Keith, born on the high seas and a daughter, Robin, born in Japan. As you have probably guessed, Buik went regular U.S.N. in the C.E.C.; he is now stationed in California. Marshall Byer married Dorothy E. VanVleet in June, 1949, and is now working at the new pilot plant at the Corning Glass Works in Corning, N.Y.

Alvin Cohen and his wife, the former Devara Birger, are living in Lowell, Mass., where Al is in business with his father in the Suffolk Knitting Company. Dwight Collum reports that he married Serene Kunkel Quynn on September 6, 1947, and that they have a daughter, Mary Catherine. Since leaving Technology, Dwight picked up an M.B.A. degree at the Wharton School, University of Pennsylvania and is now with the Potomac Edison Company in Hagerstown, Md. George Daskal, Jr., has been with Perfection Gear Company in Chicago since his discharge from the Navy in 1946. Sam Duff, I, reports that he is with the Ferguson Edmonson Company in Pittsburgh. Bob Fraser married Marise Castelhun on February 28, 1948, and is, at present, in business with his father in Amesbury, Mass. Romeo Favreau, VIII, indicates that he married Irene Berube in August, 1948, and is now employed with Hughes Aircraft Company in Culver City, Calif. Jay W. Forrester was working at the Institute the last we knew. Jay married Susan Swett in July, 1946, and they have a daughter, Judith, three. John F. Gaffney indicates that he is working for "ole Thomas J. Watson of IBM." Sid Greenfeld and Esther Frasher were united in January, 1948, and they have a son, John Gregory. Sid is with the Asphalt Roofing Industry Bureau at the Bureau of Standards in Washington. Bob Gould, as several of you will remember, married Ruth Akabas back in June, 1944. Bob, the last we knew, was with Foster-Wheeler in New York. Louis Isenberg received his S.M. in Electrical Engineering at the Institute in September, 1948, and his M.B.A. at Harvard last June. Russ Lindberg is with the Bureau of Standards in Washington where he married Ana Reyes in September, 1949.

George McKewen returned to Technology in 1946-1947 where he received an S.B. in Course XV. Since that time, George has been with General Electric and is now with Locke, Inc., of Baltimore. Janice Waller became George's bride in March, 1950. Jerry MacKinnon, several times class president in our undergraduate days, is knocking himself out these days for the Rogers Corporation down in Goodyear, Conn. Mac is general superintendent of this pressed paperboard specialty plant. After doing graduate work at Cal Tech, Bob C. Miller is now working in the jet propulsion lab at the same place. Gladys P. Lyons is with the Planning Board in Cambridge, Mass. Stan Timmerman is with the Scovill Manufacturing Company in Waterbury, Conn. H. Jack Leonard is with Edwards and Kelcey, consulting engineers, where Jack is working on the design of the New Jersey Turnpike. Janet Harnisch of Newark became Jack's bride in May, 1948. Don Ostrower married Roberta Serden in September, 1949, and is now employed with Frederic R. Harris, Inc., of New York City.

— CLINTON H. SPRINGER, *General Secretary*, 44 Church Street, Bristol, R.I. *Assistant Secretaries*: WILLIAM J. MCKAY, 15 Barrett Street, Needham, Mass.; EDWARD STOLTZ, JR., Johns-Manville Sales Corporation, Koppers Building, Pittsburgh, Pa.

• 1946 (2-46) •

It is with the utmost regret that your Secretary must inform you of the death of Ensign Charles Dobony, U.S.N. Chuck, who was one of our most popular classmates, and also president of his Annapolis graduating class, suffered fatal injuries in a horseback-riding accident in Pensacola, Fla.

April's news items were lost by the printer, and, therefore, will be included in this report to you. John Weber and Elizabeth West of Fort Washington, Pa., were engaged in February. Art Schiff became engaged to Gladys Silver of Manchester, N.H. Art is now with the Industrial Rayon Corporation of New York. Warren Turner and Lucille Miller of Glenn Ridge, N.J., were engaged back in January. Warren is with New Jersey Bell Telephone and, as area chairman of northern New Jersey, did yeoman duty in behalf of the coming reunion.

In the marriage side of the register, Kenneth Foster and Carol Sevin of Arlington, Mass., were married on January 18. Andy Burns was married to Betty Truesdale of Danbury, Conn., in January. The couple is living in White Plains, N.Y., where Andy is working for the Norden Laboratories. Noel Coe, Lieutenant, j.g., U.S.N.R., and Grace Hobby of New Rochelle, N.Y., were married in that city in early January. The lieutenantcy was not explained in the announcement, of course — perhaps Noel will give us the details. Class President Herb Hansell and Jeanne Harris of Chicago were married in early April. Herb is bringing his wife to the reunion, where all of us here will extend our personal best wishes.

Larry Body, Lieutenant, j.g., U.S.N., has finished his flight training at Pensacola and has been sent to Corpus Christi, Texas, for advanced training. A letter from Phyl Dorfinger relates the tale of that clan's move from Scarsdale, N.Y., to Abington, Pa. This migration has to do with Glenn's new job with Fisher and Porter and the next stop will be Houston, Texas.

This is the eve, practically, of our five-year reunion to be staged at Baker House starting June 9. For those of you who are within hailing distance and are of faint heart, consider the example of classmate Don Burke who is coming all the way from Mineral Wells, Texas. Returns so far indicate a good turnout and the plans foretell a really enjoyable week end for gathering classmates. If you haven't heard about the reunion by now, it's probably too late to write for all the particulars, so just show up in Boston on June 9. — JAMES S. CRAIG, *General Secretary*, 387 Harvard Street, Cambridge 38, Mass.

• 1947 •

If any of you think I've been shirking my duty as class secretary — to wit, the absence of notes since the February issue of *The Review* — I want to go on record,

here and now, to exonerate myself of any complicity in the "emergency" which prevented the notes I had prepared for the April issue from being printed. I'm going to try to reproduce those notes from memory.

Two or three days ago, Bill Crawford telephoned me at the office to inquire if any big do was planned for 1947 this coming Alumni Day, because, if so, he wanted to be sure to attend. It doesn't look like there'll be anything special this year; but we will look forward to seeing a host of you at the Copley Plaza come June 11. Bill and I had a lengthy chat; and his big news was his engagement to Virginia F. Davis of Wellesley. They expect to marry sometime in the fall and settle down in Boston. Bill has recently undertaken a new job for General Electric in Lynn — that of test equipment design.

A couple of experiences that I had while in New York for a week last March served to convince me that for all its size, Gotham is just another small town. I was walking down Lexington Avenue one evening, and bumped into Ted Dyett and his wife. Another day I happened to be waiting for the Grand Central shuttle at Times Square, when I saw Bob Talambiras'49, just in for the week end from Philadelphia. I must mention that while in New York I had the opportunity for seeing Tony Fowler'48, Marty Starr'48, Bob Podell'49, and Moe Rifkin'48. I'm mentioning them particularly because they started with 1947, and for the obvious reasons of our time, were forced to delay completing their education. Anyway, I'm sure many of you will remember them.

Somebody made the remark the other day that I must be Arnold Judson's personal, paid, press agent. Far be it from me to turn down a dishonest dollar (only kidding Mr. Kefauver), but Arnold has so many fingers in so many pies, I feel that I must pass on the word. His latest accomplishment was the performance, last February, by the Boston Civic Symphony, of his *Prelude and Allegro* for orchestra. I attended both the concert and the party for Jud in Fred Ehrlich's room at the Graduate House. Fred will be getting his Sc.D. very shortly, by the way.

Jim Polychrone has been producing certain latent dramatic talents. His direction of the M.I.T. Staff Players' spring production of Philip Barry's *The Animal Kingdom* was a great success. Jim plays a good game of tennis, too; at any rate, he's beaten me often enough. Jim Ham, who has been appointed an assistant professor in the Department of Electrical Engineering, had a part in the production, and acquitted himself admirably. Ed Kane was here for a day or two in March to do some library research for his company in Meriden, Conn. I have received a copy of Bob Kamm's article in the October, 1950, issue of *The Australasian Engineer* titled, "The Effect of Diffusion on Structure in Alloy Systems." We have word that Clint Murchison is a member of what is believed to be the first junior board in banking. He is serving the Texas Bank and Trust Company of Dallas.

Malcolm McIlroy, Professor of electrical engineering at Cornell University, who received his Sc.D. with our Class, has been awarded the John M. Goddell Prize for

1950 for his contribution to the science of waterworks development. Dr. McIlroy developed an electrical gadget to measure pressure flows in pipeline networks. Natalie Hoyt, who is assistant to the director of the Museum of Modern Art in New York, spoke on architecture before the Gardner Woman's Club last March. And Elizabeth Weichel, another of our co-eds, is studying abroad this year on a Fulbright scholarship. Jack Greene has been appointed a consultant on radiological instruments in the Health Services and Special Weapons Defense Division of the Federal Civil Defense Administration. Jack was a former official with the Atomic Energy Commission, and as assistant chief of the Radiation Instruments Branch, was responsible for the overall co-ordination of radiation instrument development in the A.E.C., and liaison with instrument manufacturers.

Bill Bursnall took the time to write a brief note on the back of our questionnaire: "After being out of touch with La Belle Institute for almost four years now, I'm looking forward to 1952 and the opportunity of catching up on some bull sessions at reunion. [My wife, Karen, and I] just recently moved into a lush new apartment and feel like quite the old home folks. Been at the Langley lab of the NACA since October, 1947 — took the summer off — and have been delving into the mysteries of boundary-layer flow for the majority of the time. Doing some night school work through the University of Virginia, which should net me an M.A.E. in another year. . . . Will keep a lookout for any stray Techmen that might wander to the 'Sunny South.'" Bill's address is 327 East 73d Street, Newport News, Va.

Two letters from Lieutenant Myron Thomason have come this way since the first of the year. In the first, Myron writes from Okinawa that he is "teaching tactics on an island that has an average yearly rainfall of 246 inches. Great for running, too. I have been assigned to a tank company, and while my engineering doesn't hinder me, it doesn't aid too much in learning all about these darn things. The natives are poor, dirty and tired. My maid works for \$9.20 a month, and washes, irons, mends, and so on, six days a week, yet the Americans are bringing a stronger economy into being here. They diet on rice and fish . . . me, I prefer Boston's chicken and chips which we used to have with Larry Collins and Fred Ehrlich." In his second letter, a brief note, Myron says: "Would appreciate hearing from all the old gang. Maybe they would like to send a note to a serviceman, I hope. Have enclosed 20 yen for such purpose." Myron's address is: Lieutenant M. M. Thomason, 061610, Tank Company, 29th Infantry Regiment, A.P.O. 331, in care of Postmaster, San Francisco, Calif.

Also from the Far East, we have word that Joe Toomey, who left the Institute to accept a West Point appointment, is a prisoner of the Chinese. Joe, a first lieutenant, has distinguished himself in the Korean fighting, being awarded the Silver Star and Bronze Star with valor clasp for gallantry in action, and the Purple Heart for head wounds he received in September of last year.

The usual number of engagements and

marriages to report this month. Engaged are Vic Mayper and Anne Parsons of Belmont — Vic is at present on government business in the South Pacific; Mal Groves and Jean Noyes of Weston, Conn.; Bob Wales and Ruth Wilbur Johnstone of Hollis, L.I.; Sumner Matorin and Ina Pearl Frank of Brookline; and John Fennessey and Anita Marie Palmer of Cambridge — John graduated from Tufts medical school in 1948.

The New York papers report the wedding of Count Guy deLyrot and Jeanne Chantal de Maleissye of New York and Paris. First time I knew we had a nobleman in our Class. Also married are Gene Michal and Sara Bailey of Andalusia, Ala.; Phil Jonsson and Jo Ann Gamble of Midland, Texas; John Harvell and Barbara Murphy of Cambridge; Bud Palitz and Louise Voss Beringer of New York, N.Y.; Bob Marks and Dorothy B. Alexander of Brooklyn, N.Y.; Dick Wentink and Ann Wilcox of Pownall Center, Vt. — Dick is a research engineer with United Aircraft, East Hartford, Conn.; and Barry Brown and Sylvia Van Anda of Scarsdale, N.Y. — Barry is with the Hooker Electrochemical Company of Niagara Falls, N.Y.

I regret to have to report the death of Robert H. Olson. We have no details. — CLAUDE W. BRENNER, *General Secretary*, Room 33-316, M.I.T., Cambridge 39, Mass.

• 1949 •

April 14 was the night of Chi Phi's annual "Bohemian Brawl" which drew '49 men from far and near. Seen among the party-goers were Kee Taschioglou, Dave Gaillard and Bob Breese, all three in their final year at the Harvard Business School. Jack Cook, who is now in the traffic department of Bethlehem Steel, took a short vacation from his duties in Bethlehem to join the festivities. I also bumped into Ronnie Green, in from Pittsburgh, and Mat Leupold. Mat has been working with the supersonic wind tunnel at M.I.T. since graduation.

Roland Jalbert left the High Voltage Engineering Corporation to return to the Institute as a radiology physicist to do research in the cancer treatment laboratory. Joseph Harian, who recently entered his dad's business, Harian Stitching Company, earned a page-one billing in Haverhill, Mass., by providing for 300 more jobs through the expansion of their business. Alan Collins is in the final stages of his training as a Naval aviation cadet at Corpus Christi, Texas. Harvey Tuck reported to Lackland Air Base, San Antonio, Texas, a lieutenant. John Moore, with Raytheon Manufacturing Company, was noted giving talks before men's groups on effects of atomic attack.

ENGAGEMENTS: Jim Berman to Peggy Tenenbaum of Far Rockaway, L.I. Jim is with the Raisler Corporation in New York. Lieutenant Commander Victor Delano to Jacqueline Stinson of Santa Fe, N.M. Robert Gregg to Gwendolyn Phifer of Tuscaloosa, Ala. Charles Hummel to Anne Childs of Flushing, N.Y. William Whalen to Pauline Simpson of Millis, Mass.

WEDDINGS: Robert Collins to Louise

Meisner on January 13 in Akron, Ohio. Bob is with B. F. Goodrich Chemical Company. Roland Doran to Norma Ciaccio on February 3 in Belleville, N.J. Roland is a salesman for Linde Air Products Company. Walter Morrow to Janice Lombard on February 25 in Cambridge. Walt is with Bell Aircraft Corporation in Buffalo. Stuart Powell to Djuna Budington on February 10 in the Little Church Around the Corner, New York. They will live in Philadelphia. Joseph Schneider to Eunice Rabinovitz on March 4 in Boston. Herbert Spivack to Gloria Richmond in Brookline, Mass. Richard Witherell to Nancy Charlier on March 17 in Newton, Mass. Dick is with the Foxboro Company. — CHARLES WILLETT HOLZWARTH, *General Secretary*, Mellon C-44, Harvard Business School, Soldiers Field, Boston 63, Mass.

• 1950 •

Flash! Technology man becomes father of triplets. A news clipping sent in by Hank Quigley tells us that John and Betty Bonner became the proud parents of two girls, Barbara Allison and Mary Elizabeth, and a son, John Franklin, back in March. Congratulations from all of us to the newly enlarged Bonner household in Pasadena, Calif. Hank also tells us that he is with Du Pont in Wilmington, Del., along with Bob Whitney, Harry Foden and Jim Burke. Bill Nichols is employed by Hercules down in the same vicinity.

A cute card from the Vollmers tells the vital statistics on the addition to their family. A six-and-a-quarter pound bundle of charm arrived at 4:30 A.M. on April 15. They are very appropriately calling the baby girl, April. Dave is still working with the Corning Glass Works in Corning, N.Y. Mike Doyle is working at Graflex, Inc., manufacturers of fine precision photographic equipment. He has purchased a house in Rochester, N.Y., approximately two miles from the plant and he finds life quite convenient and very comfortable in addition to finding his job interesting. In his travels about Rochester, he has run into Howard Graves and Phil Byrne from Delco and Bill Howlett '49 of American Can Company.

Jim Baker has managed to get himself a good deal out of the Army. He received a commission as a second lieutenant in the Medical Service Corps. He reported on April 23 to the St. Louis Medical Supply Depot. In last month's column, I told of Jim's engagement, but he now tells me further that he and Gay have set the date for July 21 in Stamford, Conn.

The Walker student staff had their annual Assemblies Ball on April 13. Some of those who attended the gala event include Len Caro, Chuck Lusher, Ray Gillingham and Phil Byrne. Incidentally, Harry Raab, a VI-A man and now head of the Walker staff, and Phebe Duerr announced that they will exchange vows on June 16.

Dick Henderson supplies the following: "Joe Grano took basic at Fort Dix and is now at the Army Chemical Center in Edgewood, Md. Dick Greco of Boston has joined Sid Gianni in Hartford, Conn., and is working with him at a glass works. Sid and his wife are now proud possessors

of a new baby." There was one section of Dick's letter that I had to read over twice, it surprised me. "Pat Frazier has at last said, yes, so I am now an engaged man." Welcome to that ever-increasing number of classmates who are now engaged, Dick.

And speaking of engagements, here are those announced via the news clipping service. Paula Shepard and Clarence F. Picard head the list for this month. A June wedding is being planned by Barbara Grow of Cambridge and William Grim of White Plains, N.Y. Other engaged couples who are planning June weddings include: Jane Lillian Connington and Robert H. Elliott, Jr.; Adele Celia Sargent and David Lawrence James; Joan Wright and Robert A. Kovacs; and Rella Murr and Alan G. Bates. Mary Louise Wilson and Dean Stockett Edmonds, Jr., have also announced their engagement and are planning on a July wedding. Dean is now studying at the graduate school of Princeton. One last engagement is that of Dawn Weathersby to Robert Noyes Randall. He is presently studying at Borlänge, Sweden.

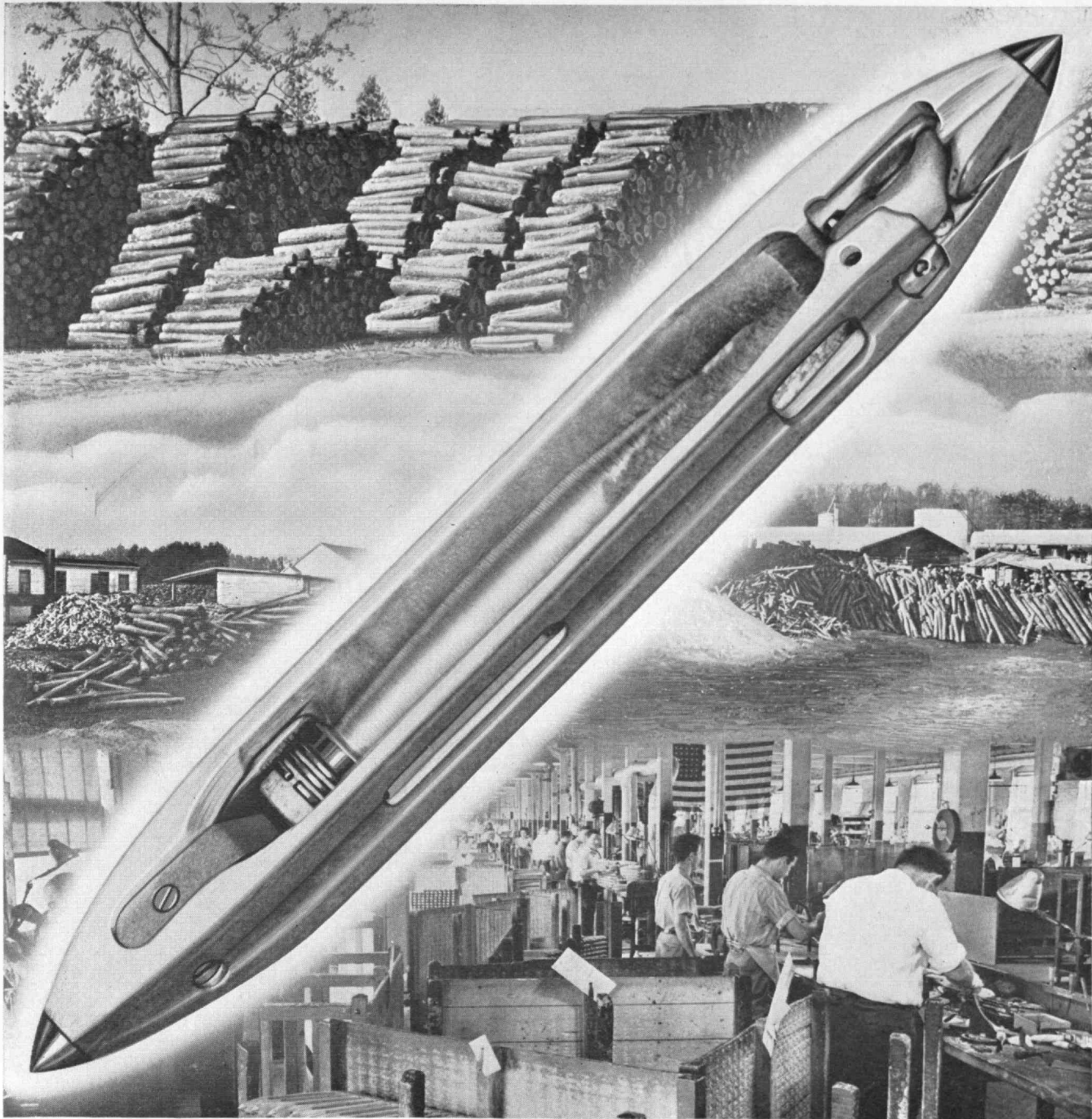
Louise Herron became the bride of Robert Titus on March 16. After a wedding trip to Atlantic City, the couple took up housekeeping at 42 Houston Avenue,

Milton. On January 28, Irene Sable became Mrs. Milton Nathan in Dorchester. The couple then motored to Oak Ridge, Tenn., to take up residence there, as Milton is employed by the Carbide and Carbon Chemical Corporation at Oak Ridge. Mr. and Mrs. Slepian of Mattapan, Mass., announced the marriage on February 17 of their daughter, Judith, to Lewis W. Berger of Philadelphia. There were Easter Lilies on the altar for the marriage of Jean Frances Dennett to James P. Gay of Coldwater, Mich. Lee Richardson of Virginia was best man and ushers included Robert Roig and Leo Sartori of New York, Chester Claff and Robert Miller of Boston, and Harvey Nickerson of New Jersey.

Lieutenant Grant Macdonald was called to active duty and was stationed at Fort Dix in March. He had finished his refresher course and was expecting to depart for Europe. Second Lieutenant Stuart D. Shaw of North Quincy, Mass., was called to active duty with the Army Ordnance Corps recently and has reported to the Aberdeen Proving Ground in Maryland. Second Lieutenant David E. Gushee of Milton has been assigned to the Chemical Corps, Army Chemical Center, Maryland. Gushee was employed by the Du Pont Company, Wilmington, Del., before beginning his present tour of military

duty. I finally have found out where Gene Comeau was shipped after Dix. He is now at Camp Detrick, Maryland, where he is doing research work for the Army. Eugene Dunn of Weymouth and Tom Wilson are now at the engineer center here at Belvoir. And in the Washington area, Phil Byrne writes that "Robert Lyons, who was at Delco Appliance in Rochester, is now in Washington, D.C., with an activated R.O.T.C. commission." Phil also lets us know that Don Brah is working at Lynchburg, Va.

An interesting note from Claus Manasse tells us the news about the University of Chicago. Sid Holland is working on his master's in mathematics and Claus is working on his master's in business administration. Claus is hoping he can get his degree in June before his call from Uncle Sam. He has a commission in the Corps of Engineers and expects to join the group at Belvoir, presently. As for news about your reporter, I am still at Belvoir, still training and still kept busy beyond description. But I shall finish this particular course in a few weeks and then have it a good deal easier, I hope! I plan to get my first furlough at the time of Alumni Day and surely hope to see you in Cambridge on June 11.—JOHN T. WEAVER, General Secretary, 1772 East Tremont Avenue, New York 60, N.Y.



For decades, Draper Corporation has carried out research on various species of wood from all over the world, on synthetics and on other materials from which to make shuttles, but dogwood reigns supreme.

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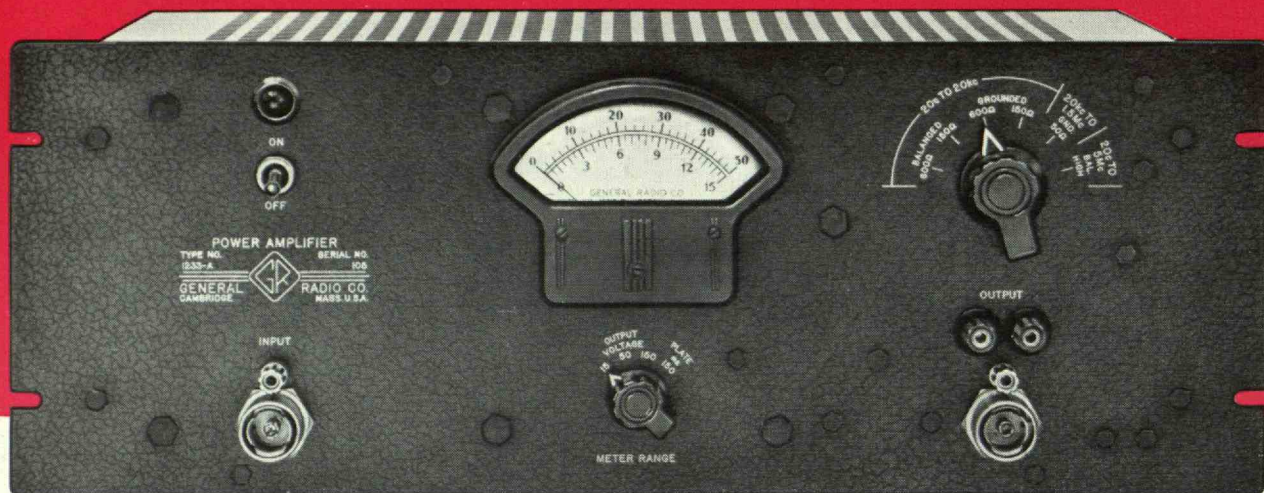
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Announcing a New Wide-Range Power Amplifier

with Substantial Output from 20 Cycles to 3 Megacycles



THE USES for a wide-range aperiodic amplifier in the laboratory are many. A wide range amplifier of considerable output is particularly useful in development and general testing of audio-frequency equipment, and in driving supersonic generators.

The new G-R Type 1233-A Power Amplifier has three output combinations:

20 cycles to 20 kilocycles, into 150 or 600 ohms, balanced or grounded. Output of 15 watts is provided between 50 and 15,000 cycles.

20 kilocycles to 1.5 megacycles into 50 ohms, grounded. Output 15 watts from 30 kilocycles to 0.5 megacycles; 8 watts at 1.5 megacycles.

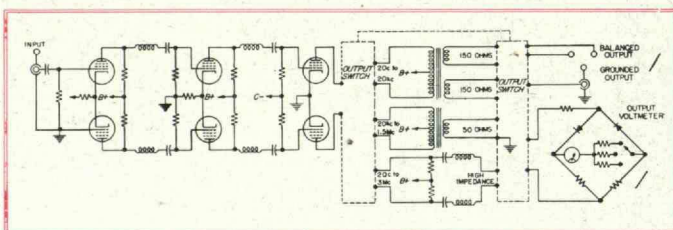
20 cycles to 3 megacycles; output 150 volts peak-to-peak, for a high impedance load with a gain of 60 db. With grounded output, voltage is limited to 50, peak-to-peak, with a gain of 54 db.

The 20 cycle to 3 Mc output is intended for use as an oscilloscope deflection amplifier. The maximum output is secured in all cases with an input voltage of 0.2 volt. Distortion is below 3% at maximum output over most of frequency range. Noise is between 60 and 70 db below 15 watts.

The instrument is provided with a diode voltmeter with full-scale ranges of 150, 50 and 15 volts to indicate the output voltage.

The high voltage power supply uses selenium rectifiers in a full-wave voltage-doubling circuit and a two-section LC filter. A bias supply, using selenium rectifiers, provides fixed voltages for the output stage.

This amplifier brings to the development and laboratory technician an instrument of considerable value in that in one instrument a source of audio and r-f amplification of very high gain and very good frequency characteristic is available at considerably less cost than that required to develop and construct an amplifier or a series of amplifiers equal to the performance of this one.



The basic circuit consists of three push-pull broadband amplifier stages and three output circuits, selected by a switch. Inter-stage couplings are the series-peaked type, designed for constant gain up to 5 Mc. The input stage operates as a phase inverter.

Separate output transformers are used for the 20 cycle to 20 kilocycle and 20 kilocycle to 1.5 megacycle ranges. Both transformers are toroidally wound. Special care was necessary in the design of these trans-

formers to achieve satisfactory performance at the relatively high frequency at which they operate. Both the leakage reactance between the primary and secondary windings and the distributed capacitance of the primary are limiting factors in determining the high-frequency performance.

Polystyrene cups are used as the interwinding insulation to keep the capacitance of the insulation at a minimum.

Type 1233-A Power Amplifier \$525.



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